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ABSTRACT

Presented in this curriculum guide are the teacher instructions and student materials for field trips to the school forest. Learning activities, utilizing the philosophy, materials, and procedures of Project Learning Tree (PLT), are included for grades K-12. Each activity includes the subject area, learning objective, grade level, procedure, corresponding Project Learning Tree activity, and extensions. Student and teacher evaluation forms are included.
(BT)

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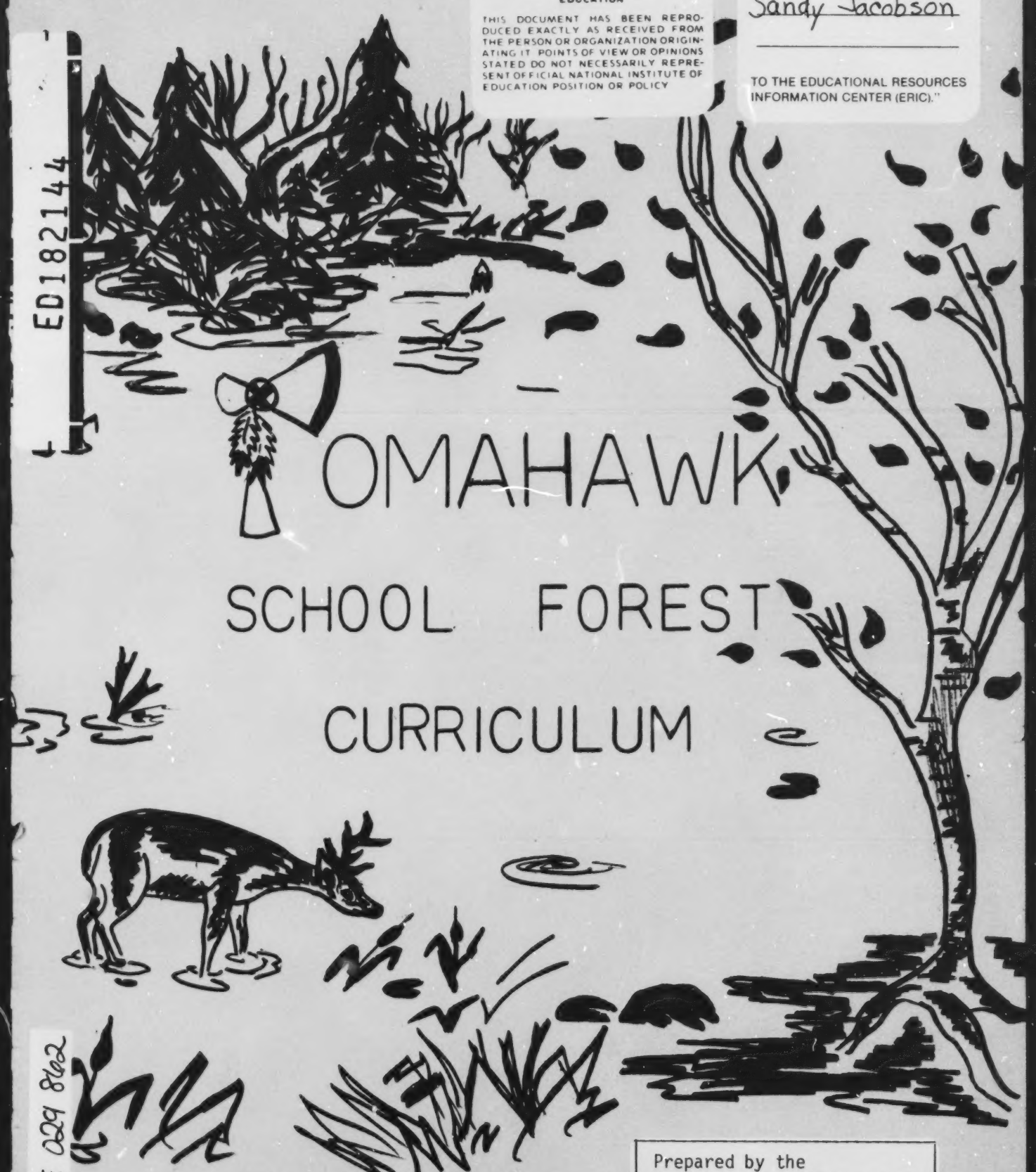
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TOMAHAWK SCHOOL FOREST CURRICULUM

SE 029 862

Prepared by the
Tomahawk School District
Tomahawk, Wisconsin

PLT Activity Book is colored coded according to grade level.

Each Number represents your grade level in the PLT Activity Book.

K E Y

<i>K.</i>	<i>-Red-</i>	<i>10-38-60</i>
<i>1st Grade</i>	<i>-Yellow-</i>	<i>9-12-16-28-43-47-67</i>
<i>2nd Grade</i>	<i>-Green-</i>	<i>7-32-36-50-51-59-81-85</i>
<i>3rd Grade</i>	<i>-Brown-</i>	<i>2-5-19-29-52-58-77-86</i>
<i>4th Grade</i>	<i>-Purple-</i>	<i>3-6-14-22-23-31-37-40-48-53-55-56-68-74</i> <i>76-82-83</i>
<i>5th Grade</i>	<i>-Orange-</i>	<i>4-15-20-21-25-26-27-30-25-39-41-42-49-54</i> <i>61-63-65-69-73-72-80-88</i>
<i>6th Grade</i>	<i>-Blue-</i>	<i>8-13-18-24-25-33-44-45-46-62-64-66-70-71</i> <i>78-79-84-87</i>
<i>All Grades</i>	<i>-Black-</i>	<i>11-17-89</i>

OUTDOOR ETHICS AND YOU

A major objective of any environmental program should be to teach an appreciation for nature. Our real measure of success is not the number of environmental principles that we teach, although they are important. Our real goal is to develop a feeling of respect for nature. So in addition to teaching environmental "facts", we must also instill feelings for the earth and its beauty and order.

You are the most important person at the Environmental Station when you come in contact with the students. You have the power to change attitudes by the example you set. Your actions, not your words, will be the greater influence on the students. The respect you show when handling a salamander won't be ignored. The gentleness or roughness you use in showing a group a flower can set values for that group. Even the importance that you attach to picking up litter or to following a trail will be noted. You could make a significant difference in shaping someone else's attitudes.

The Environmental Station utilizes a small natural area very intensively. If we are to keep it from deteriorating, we must encourage careful use. These are some of the guidelines that we need to follow:

1. When possible, leave life where you find it. Each living thing is part of a biological community. To remove it damages the entire community. Many animals have a specific home territory. Even Homo sapiens.
2. Walk the straight and narrow - Trails. We need to use fewer trails in order to stop root damage and destruction of our natural environments. Keep activities in areas where impact will be minimal. Use trails whenever possible. Before you venture off the trails be sure you are not walking into a patch of poison ivy.
3. Treat the Out-of-Doors with reverence. Your example carries more weight than you might realize, especially with younger students. Give reasons for your pro-environmental actions.

TIPS FOR A GOOD FIELD EXPERIENCE

The Value of Field Trips

A field trip can be an exhilarating experience for students, and one of the most useful resources that the teacher has at his command for stimulating interest in the natural sciences. Only in the field can students really begin to appreciate the concepts of adaptation, environmental influences, the structure and relationships of natural communities, and geological structures and processes. These subjects, no matter how well handled in classroom and laboratory, need the field experience to really "come alive" in the minds of many students. It gives these somewhat abstract concepts a new assurance of reality that may remain with students long after specific details have been forgotten. The student who has had a science course that included both theoretical and field aspects has a greater understanding of the dynamics of living things or of geological processes than the student whose experience has been limited to the classroom. For many students, a field trip makes the difference between routine acceptance of a science and active interest in it.

The greater interest, clarification, and unity provided by course-related field trips can help produce citizens who better understand the values of the natural environment both as a practical resource to be utilized and one to be enjoyed; the causes, problems, effects, and possible remedies of air and water pollution; and the necessity for conservation in all aspects of the natural environment.

However, these advantages do not follow automatically from any kind of an excursion. A field trip needs specific objectives. While it should not be so rigidly programmed that room cannot be found for individual interests or the unexpected opportunity, a certain measure of guidance and organization is necessary if the time is to be used effectively and profitably.

Checklist of General Preparations

Before going into the field, a number of administrative arrangements need to be made, and students need to be acquainted with the purpose of the trip and what it is hoped to accomplish. Preparation of the students through class discussion and outside readings is essential to getting the most out of the time spent in the field, at least in the beginning. Regardless of the aim of the trip, certain constant factors remain significant. The major emphasis in classroom preparation should include the general type of environment at the site or sites; significant components of the environment; the dominant flora and fauna, or main objects of geological structure or interest.

Use of any needed field equipment must be understood by all who will be working with such equipment. Part of the pre-trip preparation should include instruction and even practice use of any equipment the use of which cannot be learned by a quick demonstration in the field.

The significance of data to be collected should be explained so that students are not gathering what appears to them to be isolated facts and figures.

Note-taking on the spot is essential. Students will quickly learn that they cannot rely on their memories for accurate data when the trip is over. Some students may wish to supplement their notebooks with photographs. This should be encouraged. Suggest types of film which will produce the best photographic results for existing light at the field trip site.

Later, when students have learned what to look for, how to find it, how to evaluate and record observations, and how to organize their own field work, the amount of classroom preparation can decrease without reducing the value gained from the trip. Of course, greater detail, accuracy, and completeness should be expected of students as their field experience increases.

Here is a checklist of things that need to be done before starting:

1. Get administrative approval of trip and date. Then obtain trip ticket.
2. Know your liability as teacher in charge.
3. Notify all teachers whose classes may have students participating when trip overlaps more than your allotted class time.
4. Visit the field trip area beforehand to acquaint yourself with the ground and to plan the order of procedure for activities.
5. If trip site is on private property, permission should be obtained well before the trip date.
6. Arrange for transportation well in advance.
7. Have parental permission slips signed and returned prior to departure time.
8. Make arrangements for students to carry sack lunch.
9. The class must be previously prepared for the trip in the classroom or laboratory. Preparation may include discussion of equipment, the ecology of the area, the flora and fauna or geological features to be encountered and the nature of observations to be made on the trip.
10. Prior classroom discussion of the trip should include the dress appropriate for the day, taking into account the weather, nature of activity in which students will participate, and the nature of the trip site.
11. Define rules of behavior clearly.
12. If the students are to work in groups, assign specific duties to those groups before going into the field.
13. If poisonous plants or animals may be encountered, be sure students can identify them.
14. Have a FIRST AID KIT available on all trips. Insect repellants are also frequently in order.
15. Require a field notebook. Recording observations on the spot is the only way to insure accuracy.

16. When equipment is to be used in the field, assign particular students to be caretakers of each piece. They should see that it is not left behind, and should clean it and return it to the storeroom upon return to school.
17. If collecting is desirable, be sure the area is one where collecting may be done. If special permission is needed, obtain this in advance. Acquaint your students with the materials that need to be collected for study, and with the conservation ethics of collecting (one collects no more than is needed, one does not collect rare or endangered species, etc.) Be familiar with state laws on protected species.
18. Make provisions ahead of time for water jugs, litter boxes and all other necessary materials for your projects. Elementary teachers contact High School Science Department for special equipment (for example: saws).
19. Teachers should arrange to have one adult chaperone for every ten students.
20. Elementary teachers can obtain student guides by contacting the High School Science Department. *Note - High School students can not be considered adult chaperones.
21. *Optional - Teacher may want to take along a compass.
22. Indicate restroom procedures. Send children to restrooms at school before trip.
23. At beginning of year have students purchase a 10 x 2 x 8 notebook - only for school forest use.

In-the-Field Checklist

1. Gather students for a general orientation on the geography of the area, activities to be done, and time schedule.
2. When remarks are addressed to the group as a whole or any part of it, be sure students can hear what you say.
3. When student groups are to work at different stations, the location of the stations and the amount of time allotted per station should be stated. Dittoed guides are often the most efficient way to handle this.
4. If a student field trip guide is prepared, schedule field work so that students can cover all matters presented in the field guide.
5. Be sure to leave the field trip site in at least as good condition as you found it. There should be no damage to property, no discarding of litter. "Good Housekeeping" in the field will enable you or others to be welcome at the area another time.

After the Trip

1. Be sure students can properly care for biological specimens brought back to the classroom, if the specimens are not to be studied immediately. Proper care either through preservation or appropriate housing of live material is essential.
2. Any equipment used must be cleaned and stored away or returned.
3. Follow up the field trip with classwork on the evaluation of the data obtained to reinforce and increase understanding of the field observations.
4. Direct students in use of resource center materials to learn more about field experience and to study collected materials. provide for individual needs and abilities.
5. Don't forget your "thank you" notes to any drivers, property owners, chaperones, etc., who may have assisted or cooperated.

Remember: Good results demand careful planning and preparation.

Student Safety Rules

Throughout the entire school forest trip obey these rules at all times and you will have an enjoyable and accident free outing.

- 1. Stay with the guide and group on all outings - don't wander off alone.*
- 2. Don't push or shove at any time.*
- 3. Have quiet, orderly fun so that the bus driver is not annoyed and signals may be given and heard.*
- 4. Help keep bus and school forest neat and clean to avoid accidents.*
- 5. Walk at all times.*
- 6. Stop and think before taking a chance.*
- 7. Follow safety rules and directions at all times.*
- 8. Always use common sense in all situations.*
- 9. Stay away from the water unless a counselor takes you there for a purpose.*
- 10. Only bring articles that are approved.*
- 11. Report any illness or accident immediately.*
- 12. Make sure someone knows where you are at all times.*
- 13. Make sure you obey instructions. Think and ask before you act.*
- 14. Be considerate and thoughtful of members in your group and accept responsibilities.*

Woods Etiquette

Follow certain rules of conduct and courtesy toward others when you are in the woods as well as when at home or at school. Some special considerations we don't ordinarily have at home include:

1. Keep a safe distance between each other to watch the swinging back of branches.
2. Stay behind your leader. Most of you will be in strange territory. You will have opportunities to explore, but wait for your leader's permission.
3. The trees and flowers are in the woods for all to see. Don't pick, mar or damage them. Let's permit the next school forest visitors to have the same opportunity for enjoyment.
4. Don't be a litter bug. Whenever you see paper or trash left in the woods pick it up and carry it back to the litter box for the careless person who left it there. If it is just a small piece, bury it in the leaves and it will rot and become part of the soil.

Note: The school year 1978 - 1979 P.L.T. Activity 1 Adopt-A-Tree will be used by all grades. The following school year 1979 - 1980 only first grade will do P.L.T. Activity 1. All other grades will use their Variation on the same activity. You need only spend 5 - 10 minutes on the Adopt-A-Tree.

A file folder will be kept on each individual student in the student's classroom and passed on from year to year. Included in this file folder will be their activities that they have done with the P.L.T. Project and the School Forest.

JUST SIT QUIETLY -- AND LISTEN ---

AT THE VERY EDGE OF THE WOODS ---

SEE ALL THE DIFFERENT KINDS OF TREES -

THE BEAUTY OF THEIR LEAVES ---

SEE CARDINALS AND THE BLUE JAYS -

THE NUTHATCH AND THE SPAWNS --

WATCH A SPIDER SPIN ITS WEB --

OR A CHIPMUNK SCAMPER BY ---

LISTEN TO THE WIND

AS IT PASSES THROUGH THE TREES --

AND TO THE WONDERFUL SONG OF BIRDS ---

AND TO THE SOUNDS THAT INSECTS MAKE ---

SEE LIFE IN EVERY BLADE OF GRASS

EACH BUTTERFLY AND MOTH -----

KNOW - THAT THROUGH ALL ADVERSITY -

EACH LIFE IS MEANT TO BE -----

AND THIS CAN BE OUR MISSION

IN ALL THE YEARS TO COME ---

TO HELP CONSERVE -

AND HELP PRESERVE -

EACH LIVING THING AROUND ---

THAT LIFE WITH ALL ITS BEAUTY

SHALL NOT VANISH FROM THIS EARTH -----

Dedicated to Cynthia H. Heth - 1972 - Gwen Frostic

Teacher Evaluation of Field Trips

Fill out as soon as possible after each trip. Return to Sandy Jacobson.

1. How did the planned activities work with your class?
2. Which planned activities did not work well and should be revised? Why?
3. Which planned activities did you like the best?
4. Do you have activities that could be added to the curriculum?
5. Were the high school students helpful in your activities? Why or why not?
6. What classroom and/or optional activities have you used up to this time?
7. Other comments.

Student Evaluation of Field Trips

1. What activity did you enjoy today in the School Forest? Why or why not?
2. What activity did you not enjoy in the School Forest? Why?
3. Did you like this type of learning situation?
4. What were two things that you learned in the School Forest?
5. Other comments:

Hiawatha School

Trip 1 & 2 Fall and Spring

Ideas -

1. *Clear a section of trail from the white pine to the beaver pond.*
2. *Set a live trap for a rabbit in the swamp when you first come to school forest.
Before leaving check your trap and release it.
Live traps may be gotten from High School and returned there.*
3. *Draw and sketch vegetation.*
4. *Collect materials for a collage or mobile such as Activity 28 in PLT book.*
5. *Discuss tree shapes.*
6. *Do leaf prints such as Activity 9 in PLT book.*
7. *Instrument making such as Activity 43 in PLT book.*
8. *PLT Activity 67: Large Leaves.*
9. *Collect Pond Water - look under microscopes.*
10. *Identify plants.*
11. *Fire Ring - DNR*

Kindergarten and Pre-School

Trip 2

Pre-School

Take a "Nature Walk"

Identify - stones-flowers-animals-insects-trees-grass etc.

Kindergarten Half-day

PLT Activity: 1 Adopt a Tree

Find a tree that will be your "friend for a day"

Take a "Nature Walk"

Game Suggestions

Treasure Walk

Take the youngsters on a short walk or hike. Each one searches for his own special treasure - something interesting or beautiful which he would like to remember. No touching, no collecting. He stores it in his mind, not his pocket. At the end of the walk, everyone shares his treasure by telling about it.

I See A Color

One child looks around the area and selects some object in sight. He says, "I see something blue," or whatever color the object is. The others take turns trying to guess it. The first to guess correctly chooses the next object to be guessed.

Variation:

To make this a bit harder and more interesting even for young children, add more dialogue, so that IT and the others must be even more observant.

IT says, "From where I sit (or stand) I see something blue" (or some other color). The next person says, "Is it...?", naming something he sees that is blue. IT answers truthfully, "No, it's not...". Player #3 suggests something else that is blue, and the games go on until someone asks about the right object. He then becomes IT.

This game is a sort of visual treasure hunt. Children always enjoy it. It's a good game, too, because it requires observation plus color identification.

Kindergarten and Pre-School

Trip 2

Pre-School

Take a "Nature Walk"

Stress identification of objects

Kindergarten

Review Adopt A Tree

Tape remarks of children

Draw their tree

PLT Activity: 60

Math exercise

Shapes in Nature

Materials

Notebook

Sketchpad

Containers or plastic bags

Objectives

To familiarize the students with various geometric shapes.

To help the students become aware of these shapes in nature.

Description of Activities

Review the basic geometric shapes with the class. (For ex. rectangle, square, triangle, circle, line, cube, pyramid, and cone). Discuss the properties of each shape. At least two objects of each shape should be found.

Within a designated area, have the students identify these shapes in nature. Does the shape serve a particular purpose for the object? Would the function of the object change if the shape was altered? The examples they find can be written down, sketched or collected.

At the end of the lesson, discuss the various objects found for each shape. Have the students locate objects that are composed of two or more of the basic shapes.

Evaluation

This is an activity that relates math and nature study. Students learn that math is not just a classroom activity. Through this exercise students become more observant of shapes in nature and their function.

Lines - spider web

Circle - ant hill

Cone - pine tree

Circle & lines - wild fruit

Rectangle - field or clearing

PLT Activity: 10

Tree Shapes - Natural and Unnatural
Rectangle - Square-Circle-Triangle
Micro-areas

Game SuggestionsFinger Identification

Collect a boxful of nature's odds and ends - leaves, seed burrs, grasses, flowers, acorns, nuts, pinecones, twigs, pebbles, shells, and the like-things common to your area.

Each child in turn is blindfolded. He goes through the contents of the box, making piles of all similar objects - all the acorns together, all pebbles together, etc. He is timed, and his time recorded. The one with the most accurate and fastest sense of touch wins.

This game is worth practicing. It teaches concentration as well as touch identification.

Pick Up Sticks

A good game for quiet play, or while resting on a hike, or on a rainy day. Gathering and making the equipment is part of the fun, and once gathered, it can be used over and over again.

The youngsters pick up enough fallen tree branches to break up into a hundred or so sticks, each about a finger thick and three or four inches long. These are placed in a bag, basket or pile.

They also collect six peach pits, flat pebbles or other small markers that are not round. Each of these should be numbered on one side only, with a different number from one to six.

Players take turns tossing the markers out on the ground as if they were dice. Each adds up the total of the numbers that can be read, and takes that number of twigs for his score. When all the twigs have been won, the person with the greatest number of twigs wins.

Variation:

Divide the boys and girls into two teams. The highest team score wins. Keep a running record for a week and give a weekly award, perhaps a stone that has been gilded to look like gold.

Optional Suggestions

PLT Activity: 11 - Touchy Feely Box

Grade 1

Trip 1

Pre-Activity - Make a color wheel

PLT Activity: 1 Adopt A Tree

Variation No. 7

"Shadow Method" or Measuring Heights

Materials

a child of known height
a stick long enough to record the shadow length
sunshine

Objectives

to improve perception of heights
to improve skills of estimation

Description of Activities

Choose a child whose height is known. Measure the length of the child's shadow with a stick, breaking or marking the stick to record the shadow length. Then see how many times the child's shadow can be measured off along the shadow of a tree (or other tall objects) whose height you wish to learn. The height of the tree or tall object is the same number of times the height of the child as the tree's shadow is of the child's shadow.

Evaluation

In this exercise students learn one method of estimating heights. Students should be able to measure other objects by this method.

See booklet in your file folder "Shadows"

See insert in file folder "Shady Shadows"

PLT Activity: 9

Leaf Prints - Use leaves from the ground

PLT Activity: 16 Signs of Fall

Pressed Nature Place Mats

Materials

9x12 construction paper-colored
glue
ruler
scissors
clear contact paper
dried ferns, grasses, leaves, flowers, etc.

Objectives

Use of natural elements of the environment in a use of art project.
Development of aesthetic and perceptive awareness through nature and art experiences.

Procedure

Leaves, grasses, ferns, flowers, etc. should be collected and allowed to dry a few days before use. This should be done with the use of a press, heavy books, or sheets of newspaper. Items should be arranged in patterns on the construction paper. Glue into place with a small amount of glue to hold them until the contact paper is applied. Cut contact paper to size and cover objects and construction paper. If any bubbles appear, prick with a pin and press out.

Evaluation

Pressed nature placemats are creative and functional projects that are low in cost, easy to make, and have a functional value. They require little supervision to make and allow many students to participate at one time. Students can both enjoy collecting objects to use in the placemats as well as enjoy making them.

PLT Activity: 28 Fine Arts

Color Wheel

Find a sample of a color wheel in an art store or book. Draw a big one on a large piece of cardboard, and color it. Then take a group out to find natural objects that match the colors on the wheel, bring them back, and match them up. It may take a long time to fill some of the color sections, but it is fun to work on it.

Take a "Nature Walk"

Game Suggestion

Color Walk

One person looks for as many objects as possible that are red. Another chooses blue, another yellow, etc.

Variation:

Everybody goes on a yellow walk today, a blue walk tomorrow, a red walk another day. It's amazing how color-conscious the players will become. Keep lists. What are nature's favorite colors? Do the favorites change with the seasons?

Grade 1

Trip 2

Review Adopt A Tree

PLT Activity: 47 Long Range - Short Range

Use by the adopted tree. Consider hints given with that activity and some of your own.

PLT Activity: 43 Musing on Music

Design and make instruments in classroom.
Play instruments in school forest.

PLT Activity: 67 Large Leaves

See booklet "Nature Hunt" in your folder.
Insect Designs

Materials

Various insects
Hand magnifying glasses
Construction paper
Lead drawing pencils or colored drawing
Pencils

Objectives

To have students gain knowledge of the element of design.
To acquaint the student with design in his natural surroundings.

Resources

Design in Nature James Bordon

Description of Activity

Each student will find an insect and examine it with a small hand-magnifying glass. He will notice the design pattern of the different parts of the insect, (such as its wings). The student will then transfer this design on construction paper.

Evaluation

The students will become familiar with the element of "design". They will also see that design is found in all natural elements around them. It may open their eyes to a fact that they never realized before.

Game Suggestions

Nature Alphabet

Divide the players into teams if the group is large, and work together. If only a few play, each can play as an individual.

Give each child a paper or plastic bag, and a sheet of paper containing the letters of the alphabet. The teams go out, and must find some object starting with one of the letters of the alphabet (such as acorn for "A", briar for "B", etc.) within a given time limit. The person or team with the most letters of the alphabet accounted for, wins.

Ducky Lucky

A funny, happy little game depending upon voice identification.

One person is blindfolded and given a pillow or cushion. The others sit in a circle, on chairs, or on the ground.

IT puts his cushion on somebody's lap and says "Ducky Lucky". That person must answer by saying "Quack, Quack". IT then tries to guess who the player is. He may ask for a few other sounds, such as "Bark like a dog," or "Crow like a rooster". If he guesses right, the other person becomes Ducky Lucky.

Tree Claims

A good game to break up the monotony of a walk or hike. Once in a while (not too often), call out the name of a tree that is plentiful in that area, perhaps "Pine". All the hikers dash to claim a pine, one player per tree. Each player gets a pebble or bean every time he "claims" a tree. He keeps his awards until the end of the walk. The player with the greatest number gets a special treat.

Optional Activities

PLT Activity: 11 Touchy Feely Box

PLT Activity: 12 Sounds Around

Grade 2

Trip 1

PLT Activity: 1 Adopt A Tree
Variation No. 9

PLT Activity: 36 How Big Is Your Tree?

PLT Activity: 85 Make A Fossil

PLT Activity: 50 A tree From An Acorn Grows - Pine Cones

See also: Oaks, Acorns & Climates & Squirrels in your file folder.
Complete bookler in Resource Center
Take a "Nature Walk"

Game Suggestions

Acorn People

Everybody looks for and collects acorns (or other nuts) of various sizes and shapes, with or without acorn cups. Then the boys and girls paint or carve faces on the acorns. With a spot of glue, they place the acorn heads in collars or on stands made of acorn cups or other bits of nature. They can use other acorn cups for hats or ears or make animals out of the acorns. Afterwards stage a tabletop acorn sculpture show.

Sky Diver

Each person makes a figure out of twigs, acorns or other natural objects. The parachute is a handkerchief-size square of cloth. The corners of the cloth are each tied to the sky diver with a piece of string about a foot long.

Then roll up the parachute and throw it into the air as high as possible. As it comes down, it will open, and the sky diver will float down.

I Spy

Hide some small object (pebble, pinecone, etc.) in plain sight, but where it is not obvious. Everybody looks for it. When someone sees it, he must not show that he has found it, but must come over and report it to the scorekeeper.

Variation:

Hide a number of small items where they are in full sight, but hard to see, such as a twig on the ground under a tree, a piece of grass on grass, a white clover near white daisies, a brown acorn on the brown earth, etc. Make a list of such items. Each child comes over and reports what he has noticed. First to report all the objects is Mr. Keen-Eye Spy.

Grade 2

Trip 2

Review "Adopt A Tree"

PLT Activity: 7 Sensory Hike

See inserts in file folder "Patterns in Environment"

"Textures in Environment"

Game "A Sensory Hike"

PLT Activity: 59 Bursting Buds

May be done at home or school

Game Suggestions

Listening Corner, Post, Tree or Lean-to

Find some quiet, out-of-the-way place. Visit it with just one or two youngsters. Sit down, stay still, and enjoy the sounds that you'd miss if you didn't listen.

Look, too, at the little things you wouldn't see if you weren't quiet - a leaf suddenly twisting, a bit of red-capped moss, a bird's nest almost hidden.

Touch the tree behind you and feel its bark. Feel the sun on your hand, the softness of moss, the dry feel of dead leaves.

Horizontal Club

Members go to the listening lean-to, lie down flat, look up, and listen.

Optional Suggestions

PLT Activity: 11 Touchy Feely Box

Classroom

PLT Activity: 32 Did You Ever Eat A Pine Tree?

PLT Activity: 51 Growth Graph

See file folder "Plants in a Classroom" booklet

PLT Activity: 81 Fertilizere

Grade 3

Trip 1

PLT Activity: 1
Adopt A Tree
Variation No. 3
Optional Variation No. 8

PLT Activity: 2
Sounds in City and Forest
Could tape sounds at school forest and at school
A good bulletin board idea

PLT Activity: 5
The Closer You Look
Blind Nature Hike

Materials

Long rope
Blindfolds

Objectives

To observe nature using senses other than vision.
To stress the value of senses other than sight - to learn not to be so dependent on vision.
To "experience" what a blind person does and as a blind person does.

Description of Activities

Extend the rope and station students along it every few feet. Blindfold each student. Have them grasp the rope with only their right hand. This allows the left hand to be free for feeling. Two persons, one at each end, can now lead the students. Warn the students to keep quiet so that the sense of hearing can be used. Vary the environment that you are leading them through. For example, try to lead them over hills and into valleys, through sand and mud, through open land and wooded areas.

Stop. Remove blindfolds. Discuss with the students what they heard, felt, touched, and smelled. Now lead them back over the same path and see if they can recognize the various areas through which they traveled.

Another variation of this is to pair students, one of which is blindfolded and the other the leader.

Evaluation

Students become more aware of what is really in nature because they become aware of those things that one cannot see. We have a tendency to rely too heavily on our sense of vision and ignore the others.

In addition, students learn something about being blind. They at first experience the insecurity and dependency, but soon learn that one can learn much from other senses, as blind people do.

PLT Activity: 29

Colors from Nature

At the school forest sketch your own tree using nature's colors.

Game Suggestions

Nature Alphabet

Divide the players into teams if the group is large, and work together. If only a few play, each can play as an individual.

Give each child a paper or plastic bag, and a sheet of paper containing the letters of the alphabet. The teams go out, and must find some object starting with one of the letters of the alphabet (such as acorn for "A", briar for "B", etc.) Within a given time limit. The person or team with the most letters of the alphabet accounted for, wins.

Grab Bag

Collect about fifteen articles, such as a pinecone, acorn, piece of bark, moss, pebble, shell, feather, milkweed pod, burr, etc. Put each in a small plastic bag. Pass the bags around quickly to the blindfolded youngsters until everybody has had a fast feel. Then each person tries to list as many articles as he can. Longest listing wins.

Variation:

Place all the objects in one plastic bag, and pass it around the circle. Each person may take only a very quick feel; then everyone writes down as many objects as he can identify and remember.

Nature Gossip

Everybody sits in a circle. One person starts by saying the name of some animal. The player next to him must add one fact about that animal, and so on around the circle. Anyone who can't add a fact must pay a forfeit, or do a stunt.

Grade 3Trip 2

Pre-Activity - Introduce Ecosystem

See World Book

Introduction - Ecosystems

Ecosystems

One element of an ecosystem contains non-living matter (water, air, minerals, and chemical). These are necessary for an ecosystem. They help living organisms grow and they replace natural waste.

The second part is made up of producers. These are green plants, organisms that can make their own food by photosynthesis (using sunlight, air, and water).

The third part is made up of consumers. These are animals that eat green plants but also serve as food to other consumers. There are "herbivores," which only eat green plants, and "carnivores," which eat herbivores and may also eat green plants.

An ecosystem is any area where living organisms and non-living matter work together, trading life substances over and over again. The exchange of these materials never ends and is necessary for life to go on.

Procedure:

1. Name various ecosystems. Examples: a forest, a pond.
2. List the non-living and living aspects of each.
3. How are they all interrelated?
4. How is each necessary to sustain the existence of the others?

Pre-Activity - Show a water cycle

See - Overhead and pamphlet on water cycle in your folder.

PLT Activity: 58

Water You Know?

Show water cycle at the school forest.

Review Adopt A Tree

Stress the effects of water on their tree.

Pre-Activity - Beaver Study

Resource Center - Filmstrip FJ 29

Cassett Volume 2 "Adventures with Beavers"

Use card catalog for other references

At School Forest

Visit Beaver Dam

Discuss the following questions:

Possible Guidelines for study Beaver

1. Where canals were built
2. Wood used to build - draw a lodge
3. food sources - caches - pile

4. Where they live in the bank
5. Compare old and new
6. Students could make a list also.
7. Size of tooth marks
8. Height the stump is above the ground
9. Where the tree falls - direction
10. Widow - maker
The lumberman left the tree hung-up in other trees.
11. Castor - piles
Pile up mud and garbage and they set up to attract company.

Post Activity Suggestions

- Write stories
- Write poems
- Make a mural
- Make a model of a beaver dam
- Draw pictures
- Report on "Why Beavers Were Valuable to Early Explorers."

Suggested Games

Deer Stalking

A very successful and exciting game, depending upon silence for its suspense. One person is the Deer, another the Hunter. Each is blindfolded and placed at opposite ends of a large table (pingpong table is good). The Hunter must try to catch the Deer, and the Deer tries to avoid being caught. Neither can go beyond touch of the table, and neither should make a sound.

The others watch in complete silence; no laughing or whispering. If the Deer and Hunter can go barefoot, it's even better.

Your IT

A simple game, but with an element of suspense that makes it popular with youngsters.

Mark off a large circle on a sheet of paper, and divide it into at least eight segments. Write a direction in each (get suggestions from the group). Then push a pin into the middle of the circle, and put a paper clip over it. Each player takes his turn flicking the paper clip and then following the instruction on the segment to which it points.

Instructions might include such actions as:

- Bring back a leaf shaped like a mitten
- Find a smooth, round, black pebble
- Bring back a stone with a sparkle in it
- Find an acorn in its own cup
- Find a bird feather
- Make a daisy chain and wear it - dandelion chain

Variation:

Adapt this game to any special nature study - bird identification, weed study, mosses, trees, etc.

Accident Cases

Everybody looks for all examples of accidents or untimely death along the way, such as a:

*rock split by a tree root
tree blown down by the wind
tree cut down by man
tree struck by lightning
tree or land area burned by fire
empty shell
leaf partly eaten by an insect
fern or plant that has been
stepped on by somebody*

*shell with a hole bored in it
animal hit by an automobile
feather
nut gnawed by a squirrel
broken spider web
fish thrown up by the tide
anthill that has been stepped on
dead flower*

Optionals

*PLT Activity: 52
School Yard Safari*

*PLT Activity: 77
An Environment Exchange Box*

*PLT Activity: 86
Outdoor Manners
See inserts in folder "Litter" "Every Litter Bit Hurts"
Scavenger Hunt*

Grade 4

Trip 1

PLT Activity: 1 Adopt A Tree
Variation No. 6

PLT Activity: 6 Leaf Hunt Relay
Identify Leaves

Art Project - Bring back a leaf-trace around and color with crayon. Paint over with tempera.

"Getting Ready to Read"

Materials

A variety of trees

A season in which some leaves have fallen and others remain on the trees

Objectives

To use nature as a means of establishing essential basics for getting ready to read.

To have children recognize similarities and differences particularly in shapes of leaves.

Description of Activity

Take the children to an area in which there is a variety of trees that are not spaced too closely together. They should be spaced so that you will be able to be in contact with the group. Have the children work in pairs. One child finds a leaf and has his partner find a tree that has the same kind of leaf. They are to examine and feel the bark of that tree. After they are both satisfied that they found the correct type of tree, they exchange roles and the other partner chooses the leaf. They may continue the game as long as time or area permits. As a culminating activity they could collect the different leaves and categorize them by their shapes.

Evaluation

This is an activity which introduces young children to develop skills of recognizing likenesses and differences of shapes in nature. Students can use this exercise in developing their own key in identifying leaves. Also by doing this they are using their direct experiences with nature to enrich their vocabulary.

PLT Activity: 14 Living Labels
"Language Arts - Adjectives"

Materials

tagboard cards - on which the alphabet is printed
pencils

Objectives

- To have students describe objects they observe in nature.
- To provide the students with a better understanding of word usage (nouns and adjectives).
- To encourage creativity.

Description of Activities

The instruction should begin with a review of nouns and adjectives. Select an object nearby and try to think of adjectives that could be used to describe it. Have them imagine they had to describe it to a blind person.

The class can then be divided into pairs with each pair receiving a tag-board card with the alphabet on it. Allow each pair to wander within a designated area and try to find an adjective for each letter of the alphabet. Any noun may be used. Examples:

- angry bluejay
- bent twig
- colorful field

After the appropriate amount of time, assemble the class. Discuss the various adjectives used for each letter of the alphabet. Sentences can then be built from these nouns and adjectives.

A similar lesson can be done using the same type of alphabet card. The students can go on a scavenger hunt within a designated area looking for an object to represent each letter.

Evaluation

This exercise serves a twofold purpose and opportunity. A language arts activity can be brought out of the walled environment of the classroom thereby demonstrating to students that nature can provide many excellent resources for language development. Also the exercise provides a verbal outlet for new experiences gained about nature.

PLT Activity: 37 Tree Cookies

Bring back cross section for study.

Wooden Pins

Pins or pendants can be made from "slices" of wood. The slices can be cut from a limb about 2 or 3 inches in diameter. Sand the surface to show the wood grain. A pin can be glued to the back or small holes drilled on each side and threaded with cord to hang around the neck. The student's name can be printed on the pin for Ecology Club meetings, or as Litter Patrol badges. The same slice can be used to make I CARE buttons. After sanding, glue a small nature picture or stamp on the wood. Above the picture write I CARE with a magic marker; these words stand for I Care About Resources Everyday. Finish with plastic spray or varnish.

What's a Metaphor? A contribution from the State of Washington

It's phor anything you want it to be. Metaphor is part of many PLT workshops here in Washington State. It's one of those things that can be used for just about anything. We're always running across different ways of fitting it into PLT activities. Here's one way we use it.

First we explain that PLT is about trees. But it's also about a lot more than that. A tree is a metaphor. But, you may ask, what is a metaphor? Well, our use of the word metaphor might raise some eyebrows among language arts folks, but we define a metaphor as any non-literal representation of a work, concept, idea, object, etc. So - a waste basket is a metaphor. For what? For an elephant; for a social organisation; for governmental operations; for evolution; for toad warts. For anything except a waste basket.

We go a step further and use metaphor as a verb. It then becomes a process for inventing non-literal representations. What we invent may be brand new words, graphic images, three-dimensional models, whatever...

How does this work for PLT activities? One example: The elementary activity "Tree Cookies", is a nice way to introduce students to history and a sense of time related past events. When the rings from a cross-section of a tree are marked and labeled with past events there is a sudden awareness of how the present relates to the past. One's own history takes on a new significance as it is compared to the 10, 20, 50 or 100 years which are represented in that slice of wooden time.

But tree cookies can be metaphors. Or they can be metaphored. What if, for instance, tree rings didn't take one year to grow, but one month or one week or one day or an hour, a minute etc.? Breakfast through Johnny Carson could be labeled on this fast-growing tree, or the holidays during one year or the report card times of the school year, or everybody's birthday.

And what if trees grew backwards? Then a tree cookie would get smaller every year and the labels would be for future events. Each tree cookie would be full of predictions.

And what if you had no tree cross-sections to work with? Are there "tree-cookies" around the classroom, school building or school grounds? Are the layers of brick tree cookies? How about the layers of refuse in the waste basket? (Told you a waste basket was a metaphor.)

And how about building your own tree cookie? Important headlines (or commercials or bumper stickers) for each year could be wrapped around a tube in order and sent off to another class to see if they can find out the age and life-span of your "tree."

As you can see, metaphor simply extends the PLT Activity and you'll find that, yes, PLT is about trees. But a tree is a metaphor. For what? For democracy, for the United Nations, for the internal combustion engine, for... for the universe....

From: Branch 4
Periodic Publication of Project Learning Tree

Poetry Examples

Sad Susie

In eighteen hundred and ninety-three,
I changed from a seed to a sapling tree.
My roots reached into moist, rich ground,
But I had a problem with my crown.
Much bigger trees held me back,
And I suffered greatly from the lack
Of sunshine, light, and growing space
To help me take my rightful place
As a smiling winner in the race
To add more wood to my cookie face.

Cookies Forever

I thought that we would never see
A cross-cut cookie from a tree,
A chunk whose rings indeed reveal
You grew without much sip or seal.
Some callous hand has hewn you from
Some old oak or beech or gum.
Your bark has long since shed
Like hair from some poor old man's head.
Your fibers - food and clothing be
For bird and beast and man you see.
We're very much in debt to you
For benefits to us and our posterity too.

Ours

If you'll lend me your ear and your eye,
I'll tell you a story about a cookie that looks like a pie,
I am a southern red, and it's been 25 years since I came out of bed.
I've seen wet years and dry years and insects and things -
You can tell all of this by looking at my rings.
I've fed the squirrels and housed the birds,
Provided shade for deer by the herds;
I took in the bad air and gave out the good,
And all the while I was creating wood.
I was doing just fine, till I shaded the pine;
Then an axe put a finish to this wonderful rhyme.

PLT Activity: 82 Fire

Make arrangements for person from DNR to go to school forest and explain fire fighting.

Also plan a tour of DNR Station in Tomahawk to see Fire Fighting Equipment used in the State of Wisconsin.

Game Suggestions

Nature Charade

Divide up into two teams. Each team selects some nature name of not more than five letters, such as lion, bear, frog, duck, etc. In turn, each team dramatizes each letter in the name it has selected. The other team tries to identify each letter, and then guess the name.

Variation #1:

Each team selects the name of a flower, and acts out each syllable. Try these:

touch-me-not	cornation
primrose	dandelion
jack-in-the-pulpit	tulip
foxglove	forget-me-not
lady slipper	four o'clock

Variation #2:

Play this game, using birds, trees, or other categories of nature.

Variation #3:

Each team selects the name of a bird, and dramatizes it. Try these:

fly catcher	kite	grosbeak	partridge
thrasher	robin	chickadee	woodpecker

Feelings

Youngsters pantomime their physical reactions when they feel:

- ice-cold water at the beach
- something sticky
- snow getting in over their galoshes
- something that is too hot
- pebbles with bare feet
- a splinter in the finger
- a sudden rain shower
- a puppy or other soft animal
- warm blanket on a cold night
- skis for the first time
- electric fan on a hot day

They select their own "feels" to pantomime, and take turns guessing.

Progressive Hike

For arousing new interest in familiar areas, and giving everybody a chance to be the leader. Prepare numbered notes for guests using one or more of the senses. The first person to find the object of the first guest shows it to the group and becomes the leader up to the next stopping place. Add some little stunts or special requirements, just for variation and exercise. Some sample notes follow:

Note #1: Find five leaf shapes. First person to do so must show them to the entire group, and they must do as he does. He must take fifteen giant steps and then lady steps in the direction his shadow points, then read Note #2.

Note #2: Close eyes and listen. First person to identify four natural sounds may take group on a four-legged walk to nearest big rock, tree or other object and read Note #3.

Note #3: Go to the nearest evergreen (or other) tree, and look for signs of insects within ten feet. If six signs can be found, go twenty steps; then walk like a crab (sideways) for twenty feet. If less than six signs can be found, return to the rock and tell a rigmarole story about how the rock came to be there.

Grade 4

Trip 2

Review - Adopt A Tree

PLT Activity: 53
Healing Wounds

PLT Activity: 76
Healthy and Unhealthy

PLT Activity: 68
Trees as Habitats Extension 1p.114

PLT Activity: 74
A Field, A Forest and a Stream

Diggings for Artifacts

Objective

The student will dig for Artifacts on School Forest Site.

Pre-Activity

History of Wilson School site in your file folder.

Poems you find.

Folklore of Wisconsin in Public Library.

First group out will do following activities:

1. Find school dump site.
2. Will mark off with strings and stakes .1 meter square grid.
3. Map grid on paper and number them from the starting point. Make prior arrangements with High School woodworking class for stakes.

Succeeding Groups:

Necessary equipment.

1. trenching equipment.
2. screens.
3. hand shovels.

Class will be divided in 3 groups and will alternate doing following activities.

Activity 1 - Sketch school site as they think it looked.

Activity 2 - Writing original stories "If walls could only talk".

Activity 3 - Do diggings on one section of the grid already staked out. Be sure to map areas used.

Purple

Habitat

<i>Characteristic</i>	<i>Forest</i>	<i>Field</i>	<i>Pond, Lake Stream</i>
<i>Moisture</i>			
<i>Soil</i>			
<i>Air</i>			
<i>Temperature</i>			
<i>Air</i>			
<i>Water</i>			
<i>Soil</i>			
<i>Plants</i>			
<i>Animals</i>			
<i>Light Intensity</i>			

Game Suggestions:

Memory Test

Test the visual memory of the boys and girls.

Place ten different objects in a paper bag. Take them out one at a time, hold them up for a few seconds, and replace them in the bag. Then ask each youngster to list the objects he saw in the order in which they were shown. Use simple objects such as a pine cone, acorn, pebble, burr, leaf, flowers, twig, berry, seedpod, etc. - things easy to find locally.

Variation:

Use all vegetables. All fruits. All flowers. Instead of a bag, put the items on a tray. Give each person a quick look, then cover the tray. Then see how many objects they can remember and name.

Nature Calendar

Each person selects his birthday month and makes a calendar for it, decorating it with appropriate objects from the fields or woods.

Classroom

PLT Activity: 22

Maple Mallets and Ash Bats

PLT Activity: 55

Why Wooden Pencils?

Good bulletin board ideas.

Wisconsin Study

PLT Activity: 31

Forest Concentration

PLT Activity: 37

Tree Cookies

PLT Activity: 56

Sap + Energy = Syrup

PLT Activity: 82

Fire

Optional

PLT Activity: 3

An Individual Experiment

PLT Activity: 23

Make Your Own Paper

Purple

PLT Activity: 40
Did You Notice Vegetations of the Area

PLT Activity: 48
Changing Land Values

PLT Activity: 83
Movin' Forest & Non Forest Areas

Grade 5

Trip 1, Fall

PLT Activity: 1 Adopt A Tree

Variation 1

Variation 10

Pre-Activity

Study leaves in classroom first

Resource Center Material -

Examining Your Environment "Trees"

Kit #78 Filmstrips and Cassettes

Kit #80 & #81 Nasoo Leaf Molds

In your folder - Booklet called Trees

Poetry Activity on Trees

I. Writing cinquain - emphasizes the use of key descriptive, action-packed words.

A. Form

Noun

2 Adjectives (describing noun)

3 Verbs (complementing the noun and adjectives)

1 Phrase (brief description of the noun)

Noun (repeat the noun or suitable synonym depending on what theme you wish to emphasize)

B. Examples:

Trees

Shady, bare

Branching, blooming, growing

Provide a home

Trees

Dust

Musty, fuzzy

Floating, choking, collecting

Dirt sliced thin

Dust

II. Tanka - follows syllabic patterns similar to haiku

A. Form

5 lines strictly measuring

5-7-5-7-7 syllables (you can modify number of syllables somewhat)

B. Example:

The snow falls gently

over the land and on us.

It glides through the air

like moths flying in the sun.

Branch 4 Publication of Project Learning Tree

PLT Activity: 15 Branching OUT

In your folder see worksheets

1. A key to Common Broad-Leafed Trees in Winter.

2. Key to Common Trees of Wisconsin

PLT Activity: 27 Plant Dyes

Collect materials for classroom

In folder see sheet for Nature's Part in Art Plant Dyes

See booklet in folder "Nature's Part in Art"

Tie Dyeing

Tie Dyeing

Natural dyes can be made from many things found in woodland areas - poke-berries, walnut hulls, dandelions, etc. Use big white handkerchiefs and try tie-dyeing.

Take a nature walk

Build indian homes etc. See Indians

PLT Activity: 39

Start a City

PLT Activity: 41

The Native Way, A Natural Lifestyle

PLT Activity: 42

Native American Dwellings

Each teacher will have an area to do various activities. The group then may develop area in any way they wish. Measure area - clear land - build a village. May developed as Pioneer or Indian village.

Preparations for trip - I

Choose culture you wish to build and decide the type of village. Make a plan of this village. Discuss with children and divide in groups to

1. Pace off area
2. Small trees replanted
3. Cut trees for clearing
4. Pick up cut brush and pile
5. Pick rocks for fire pit - arrange other rocks to form pit.
6. Limbing and making poles
7. Make teepees, wicki-up or what ever you choose.
8. Group could make a spit.

Materials needed

Gunny sacks or covering

Bindertwine

Gloves

Shovels

Paint if you wish to design teepees

Saws may be gotten from High School

Game Suggestions

Indian Hike

Go in single file, v-e-r-y carefully. Try not to make a sound. Avoid stepping on dry twigs or through dry leaves. Don't talk above a whisper. Stop frequently to listen as well as look. What sounds can be heard?

Listen for wind, song of a bird, rustle of some small animal, a distant plane, water running, leaves rustling, squirrel chattering, insect humming. Look for sources of all the sounds.

Kick Stick

An old Indian game.

Each person cuts and decorates his own, so that it will be different from all the others. Sticks should be about 1" thick and 4½"- 5" long. (Keep them and use them in many other games).

Have the players line up at a starting line, sticks at their feet. At a signal, each tries to get to a finish line first by kicking his stick.

Variation #1:

Play it around a circular course. Add obstacles.

Variation #2:

Try using sticks that are partially curved, like a boomerang. They'll move erratically and make the game more difficult and interesting.

Go Get It

Get the children into two teams, A and B, each with a captain, and number off. The teams stand facing each other, Player A1 facing Player B1, and so on. You stand at the end, an even distance between each team.

To start the game, call out something that you can see, or know is nearby, such as "A leaf with smooth edges - Number 5". Both players #5 must dash to get a leaf with smooth edges and bring it back to you. The first to do so scores a point for his team.

Then call out some other item, and another player number, and so on. Items might include:

a white flower	a bit of moss
a pebble that shines	a live insect
a tree twig	a pinecone
a seed	a burr
a nut	a feather

Grade 5

Trip 2 Winter

PLT Activity: 15 Branching Out - Stress Bark
See Examining Your Environment "Trees" in Resource Center
Could do "Crayon Rubbings"
Things to look for-in variations of bark:
 small trees and large trees
 age of trees
 environment of trees

PLT Activity: 69 Bird "n" Worms
Protective coloration and camouflage
Game - Caramels and Marshmallows-See file folder
Review Adopt A Tree

Cross Section of Snow Bank
See Examining Your Environment "Snow & Ice" Pages 21-31
See "Profile of a Snowdrift" worksheet in folder.
Take temperatures of a snowdrift.
Use a yardstick with a thermometer taped on.

The Profile of a Snowdrift

Station	1	2	3	4	5
Temperature at 6" Intervals					
36"					
30"					
24"					
18"					
12"					
6"					
Bottom					
Number of Layers					
Depth of each layer					
Layer #4					
Layer #3					
Layer #2					
Layer #1					
Color of snow in each layer					
Layer #4					
Layer #3					
Layer #2					
Layer #1					

Grade 5

Trip 3 Spring

Review your "Adopted Tree"
Take a "Nature Walk"

PLT Activity: 54
What's in Soil

PLT Activity: 80
Sand, Silt, & Clay

Soil Study

Materials

Hand lens, sand, clay, humus, garden soil

Procedure

1. Look at a little bit of each substance under the lens.

Examples:

Humus is composed of decayed plant and animal matter.
Garden soil is composed of soil and plant and animal decayed matter.
Sand is composed of minute particles of rock.
Clay is composed of even smaller pieces of sand.

2. Try to find natural clay in your neighborhood and use it for modeling.

Soil Study

Materials

Two metal cans, two glass containers, hammer and nail, humus, sand.

Procedure

1. Hammer the nail through the bottom of each can. Make a few holes in each.
2. Place each can over one container.
3. Pour the humus into one can three-fourths full, and sand into the other in the same amount.
4. Pour an equal amount of water into each can.
5. The water should flow through the sand faster than the humus because there are more empty spaces in the can of sand. Humus holds water better because it is a more solid mass.

Soil Study

There are several tiny spaces between the fibers in blotting paper. Water rises in these spaces as well as those in soil. There are many tiny spaces between granules of soil in which the water rises.

Materials

Glass container, blotting paper

Procedure

1. Pour one inch of water into the container.
2. Put a strip of blotting paper into the container so that it touches the water.
3. The water rises in the paper.

Materials

Sand, clay, one cake pan, two lamp chimneys.

Procedure

1. On the bottom of each lamp chimney, fasten a paper towel with rubber bands.
2. Pour water into the pan half-way up.
3. Place the lamp chimneys, paper towel side down, in the water.
4. Fill one chimney with sand and the other with clay.
5. The water will rise in both, but it will rise faster and higher in the sand.
6. Plants don't get a good water supply in clay.

Soil Study

Materials

A large glass container, clay, sand, gravel.

Procedure

1. Pour water into the container until it is three-fourths full.
2. Mix up the clay, sand, and gravel in equal parts.
3. Put the completely mixed blend of soils into the container. Cover and shake until well mixed. Remove the cover.
4. Leave the container alone overnight.
5. By morning, the soil will have separated into three distinct layers. The heavier soil will be on the bottom, and the lighter soils on top.
6. Rivers carry loose soil (sand, clay, gravel) into lakes and oceans, where it sifts to the floor and settles in layers, as shown in the experiment.

Soil Study

Materials

1-foot-square board, soil, a wooden block.

Procedure

1. Spread the soil evenly over the board...this will represent an imaginary farm or field.
2. With a pencil, hoe the field in horizontal semi-circles.
3. Place the block under, raising one side, to represent a hill.
4. Spray water on the top of the hill. Observe that the water stays in the irrigation ditches and does not run down the hill.
5. Do the experiment again. This time, hoe the ditches downhill. What happens? Grooves plowed correctly save the seeds, plants, and soil from erosion by rain.

In folder see booklet "Soil."

Make a ridge frame out of cardboard.

PLT Activity: 65

Web of Life - Ecosystem

Ecosystem

Materials

4 or 5 aquariums
collecting bottles
nets and screens
cameras

Resources:

Field Guide to the Mammals
Comstock's Nature Study Book
Pond Life (Peterson)
Reptiles and Amphibians (Golden Book Series)

Objectives

To show students what ecosystems are.
To show students how all life forms are interrelated.
Build visual representations of ecosystems.

Description of Activities

The students should be divided into 5 groups. Each group should do a study of one of the following: a. Climax forest, b. Brushy area, c. Field, d. Marshy area, and, e. Stream, river or pond. Suitable clothing should be worn for each area. The students can do a vast number of activities such as; population surveys, observing feeding habits, cast animal tracks, and collecting specimens for terrariums or aquariums. Photography and sketching can also be added for interest. An activity of this magnitude should be carried out over a period of 3-5 weeks.

Evaluation

This type of activity can be used as a complete science unit in itself. The finished product should be a center of interest which is constantly changing and being added to, Mini-ecosystems.

SOIL - PLANT - ANIMAL SURVEY

Team _____

Location _____

Description

Soil Type

Dry, crumbly, - clay - loamy - moist

[illegible]

How deep do the roots grow?

Do the roots help to hold the soil together? Why or why not?

Needed:

1. hand shovel
2. measuring rod - centimeter - decimeter
3. shoe box to put soil sample in

Game Suggestions

Stalking

A really exciting game, full of suspense. Set aside an open area, indoor or outdoor, around 40' x 80' if possible. Mark a center line across it, a starting line at one end and a finish line at the other. Station three blindfolded sentries along the center line.

At a signal, a group of youngsters (the stalkers) stealthily start toward the finish line trying to pass the sentries without being heard. The sentries try to detect the stalkers, and point at them. When judges, stationed along the sidelines, see a sentry point out a stalker, they signal the stalker to sit down where he is.

The game is over when all the stalkers have been detected, or have successfully reached the finish line. Stalkers must stay in place until the sentries have removed their blindfolds, so that they may see how successful they were in detecting the sounds of the stalkers. Sidelines must keep absolutely still.

Variation #1:

Station a sentry in the middle of a wood road or path.

Variation #2:

Play in a circle. Sentry in the center. Stalker must creep up from edge of circle and touch the sentry without being heard.

Chain of Life Vocabulary List

This vocabulary list is for you, the teacher. We suggest you do not ask your students to memorize the definitions. (You might like to place the words on your spelling lists, though.) Each word actually represents a concept your students will be learning first-hand, at the School Forest.

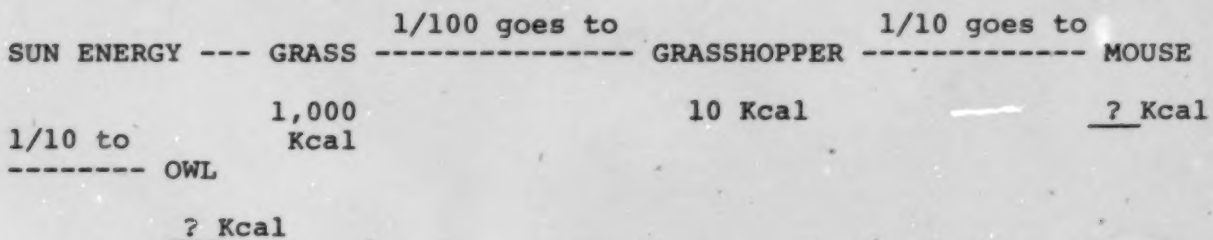
- COMMUNITY - all the plants and animals in a particular environment.
- CONSUMER - an organism that gets its food energy from other living things.
- DECOMPOSER - plant or animal that feeds on once-living material and causes it to mechanically or chemically break down.
- ENERGY - the capacity to do work.
- ENVIRONMENT - all of the surroundings of an organism, including other living things, climate, and soil.
- FOOD CHAIN - the passage of food energy through a series of organisms, for example, grass to mouse to fox.
- FOOD WEB - a system of interlocking food chains; the total pattern of all of the separate food chains in a community.
- PRODUCER - organism in a community that converts the sun's energy into food energy that can be used by consumers.

Reference: Pringle, L.P. 1971. Ecology: Science of Survival
New York: The MacMillan Company, pp. 141-146.

WORK SHEET #1 -- Values Clarification

Energy is lost every time it is passed from one creature to another in the food chain. When a grasshopper eats grass, the grasshopper gets the sun's energy that has been stored in the grass. But not all the energy. Some of the energy was used up as the grass grew and produced seeds. Some of the energy was stored in the grass roots which the grasshopper did not eat. And some of the energy could not be digested by the grasshopper, but passed out of the grasshopper as waste.

At each link in the food chain some energy is "lost". One ecologist discovered that less than 1/100 (or 1%) of the energy is passed on from the green plants (producers) in the food chain to the primary consumers (plant-eating animals). After this, less than 1/10 (or 10%) of the energy is passed from one consumer to the next. To understand what this means, look at the food chain below:



Suppose we start with 1,000 Kcal of sun energy stored by the grass. (Kcal are Kilocalories which is a unit of energy just as an inch is a unit of distance.) Since the grasshopper can use only 1/100 of this energy, the grasshopper has $1/100 \times 1,000 \text{ Kcal} = 10 \text{ Kcal}$. The grasshopper gets only 10 Kcal of the sun energy stored by the grass.

Now the mouse eats the grasshopper. How much of the sun energy does he get? He gets $1/10 \times 10 \text{ Kcal}$ (grasshopper energy) = _____ mouse energy???

How much of the sun energy did the owl finally get? $1/10 \times$ (mouse energy) = _____ owl energy???

Does anybody eat an owl? If someone did, how much energy would he get?

Now answer these questions:

Circle the right word. The farther away you get from the sun in the food chain, the (more or less or same) sun energy you will receive?

Circle the right word. The (longer or shorter) the food chain is, the less energy is "lost".

Where would you put yourself in this food chain if you wanted to get as much of the sun energy as possible?

If there was a food shortage in your country, what would you tell the people to eat to make sure they got as much food energy as possible with little energy "lost"?

WORK SHEET #2 -- Values Clarification

Please answer the following questions. There are no right or wrong answers. These questions are for you. Try to give reasons for your answers if you can.

1. Do you eat steak? _____ How many times do you eat steak in one month? _____.
2. Would you ever stop eating meat or not eat as much meat?
3. What would your mother say if you would not eat any meat?
4. Does your family ever eat meals that have no meat in them at all?
If yes, what? _____
Do you like it? _____ How often do you have it? _____
5. How much food does your family have to throw away every day?
(make a guess)
6. What could your family do to cut down on garbage?

Now let's look at processed foods. Lots of energy goes into making highly processed foods. Some examples of highly processed foods are soda, potato chips, and candy bars.

Behavioral Objectives

After completing this exercise, students will be able to

- construct a food chain. They will be able to draw, write, or verbally explain each living thing in the chain and indicate how energy is passed on from the sun to each living thing.
- construct a food web. The students will be able to draw, write, or verbally explain the role of each living thing in the web. They will be able to explain what happens to the energy from the sun at each level.
- verbally explain their roles in the food chain and the food web.
- speculate verbally, or in writing, what would happen if certain members in a food chain or web were destroyed.
- call by name the different levels of every food chain, producers, consumers, and decomposers.

Chain of Life Worksheet

In folder see insert Ecosystems and Classroom Activities

In folder see game "Fox-Rabbit-Carrot"

Fox-Carrots and Rabbits

3 groups of kids

Rabbits - rag in belt

Foxes

Carrots

Objective

This game is played in rounds. Rabbits run as group to get a carrot without getting caught by foxes.

If rabbit is caught by fox, the rabbit becomes fox. If rabbit brings back carrot successfully, carrot becomes rabbit. If fox doesn't catch rabbit, fox dies, and becomes carrot. If rabbit doesn't get carrot, rabbit dies and becomes carrot.

Tabulate round on paper. Start out with half as many foxes as rabbits. Play several rounds to show chain of life.

PLT Activity: 88

Another Way of Seeing

Tape record reactions and sounds.

Activity on Plotting History of 1862 site

Insert in your folder.

Write version of how its changed.

Bending a Sapling

Information in folders.

Game Suggestions

Scavenger Hunt (Obis)

Sniffer Quiz

Place items that have distinctive odors in tightly covered cans or jars, numbering each. Cover each so that the contents can't be seen, and no name is visible. Number each for identification.

Youngsters take turns smelling the contents of each, and then write down their guesses. The contents might include small amounts of such items as:

coffee	tea leaves	cheese	cinnamon
lemon	lime	chocolate	mustard
nutmeg	bay leaf	sage	garlic
onion	oil of wintergreen	leather	soap
vanilla	vinegar	mint	grapes

Using the same items, the youngsters try to find the word that most exactly describes the smell of each.

Each person thinks carefully and then tells what event in his life each of the following smells makes him think of:

smoke	gasoline fumes	tar
fish	sweat	perfume
fresh-cut grass	meat broiling	talcum powder
hay	bacon cooking	kerosene

Everybody thinks up and makes a list of all the words that can be used to describe how something smells. Try to use them all in the course of a week.

How many of those words can also describe taste?

Each person tries to remember the very first time he ever smelled those special odors. How old was he? Where was he? What was he doing?

Each person pantomimes his favorite smell, for the others to try to guess.

Everybody decides upon and talks about what he thinks is the nicest smell in the world.

Nature's Travelers

Each person collects as many different kinds of nature's travelers as he can find, and brings them back for identification. Try looking at them through a magnifying glass, to see how they're made. Look for such items as:

Seeds with wings, such as box elder, ash, maple.

Parachute seeds, such as dandelions, milkweed, catalpa, buttonball tree, cattails.

Seeds with hooks, like burrs, beggar-ticks.

Seeds that shake out, like poppies and columbines.

Seeds that pop out, like jewelweed, violets.

Buzzy's B's

The boys and girls collect a supply of burrs - the cockle-burr type. They add bits of leaves, grass, etc. for wings, legs, antennae. To display, mount with pins on a sheet of cardboard, or on the bulletin board. Then hold a See-A-Bee Show.

Classroom

PLT Activity: 20
Woodwork

Suggestions 6 speakers - 2 each day

Nursery

Papermill

Sawmill

Forester C-I

Game Warden

Logger

PLT Activity: 21
Interview a Boardworker

PLT Activity: 49
City Trees - Mike Bailey

PLT Activity: 65
Web of Life
Pre-Activity for Spring Trip

Indians and Pioneers

PLT Activity: 26
Invent a Game

PLT Activity: 27
Plant Dyes

PLT Activity: 35
Folk Lore - Fox Fire Books 1-4

PLT Activity: 39
Start a City

PLT Activity: 41
Native Land

PLT Activity: 42
Native American Dwellings

Optional

PLT Activity: 4
Choose an Environment

PLT Activity: 11
Touchy-Feely Box

PLT Activity: 25
I'd Like to Visit a Place Where

PLT Activity: 30
Holding Power (Pride Park)

PLT Activity: 61
Sunlight and Shades of Green

PLT Activity: 63
Seed Dispersal

PLT Activity: 72
Plant Growth and Temperature

PLT Activity: 73
Rainfall and the Forest

Grade 6

Trip 1 Fall

Take a "Nature Walk"

PLT Activity 1 Adopt A Tree
Variation 1
Variation 5

PLT Activity: 8 Patterns in Nature
Collect objects for Art Class
Smoke Prints

Smoke Prints

Materials

Newspaper
Shortening or an unsalted butter
Candle stub or kerosene lamp
Mimeograph or other unglazed paper
Pan of water (for safety)
Powered tempera paints (if print is to be colored)

Description of Activities

Prepare a sheet of smoked paper in the following manner:

Work on a pad of newspapers. Rub a small amount, less than $\frac{1}{4}$ of a teaspoon, of shortening into a sheet of unglazed paper, being careful not to wrinkle the paper. Rub in well until the paper is translucent and no visible grease remains on the surface. The greased area need be but little larger than the size of the largest leaf to be printed, and need not cover the entire sheet of paper.

Turning the greased side of the paper down, pass it horizontally through the tip of the flame of a candle or lamp, keeping the paper in constant motion until the greased area is coated with a uniform velvety coating of smoke. Use care to prevent the paper from touching the wick and leaving an oily spot on the paper. Keep the paper in constant motion to prevent its scorching or catching fire. If it should catch fire, dunk it quickly in the pan of water kept on hand for that purpose, and start the process again with a fresh sheet of paper.

Prepare the leaf selected for printing by placing it on the smoked paper with the veined side of the leaf next to the smoked area. Cover the leaf with a piece of newspaper and rub over the leaf with the fingers of one hand while holding the paper and leaf quickly become well coated with the smoke.

Make the print by placing the leaf with the smoked side down on the material to be printed. Cover with a clean piece of newspaper, and rub carefully with the fingers of one hand while holding the leaf in place with the other. Rub from the center rib of the leaf outward. Moving the leaf while rubbing will cause a "double exposure" and spoil the print.

Remove the leaf and see the print. With normal care this smoke print will not smudge. The same leaf may be used for several prints.

The print may be colored by dusting powdered tempera colors or metallic stencil powders over the print, or by tapping color on the print with the finger tip or a piece of facial tissue. Shake, blow, or brush excess color from the print. Spray with a fixative if the color tends to smudge.

Evaluation

Smoke prints can be used as a record of leaves collected in a nature study or forestry project. They can be used on stationery, place cards, Christmas cards, as well as for a wall decoration as a framed print.

PLT Activity: 13 Memory Circle
Quiet time - Good for after lunch.

PLT Activity: 62 Fallen Log
Exploration of Life in a Decaying Log

Description of Activities

Draw a sketch of residents you find in the log, and label them. If you are not sure, take a specimen also and look it up later.

When you find an inhabitant tell whether it is an animal, plant, or insect and where you found it.

- a. on top the log
- b. just below the bark
- c. just below the first covering of wood
- d. in the middle of the log
- e. on the inside bottom of the log
- f. on the outside of the log
 1. the sides
 2. the bottom

How does the decaying log feel to the touch? Smell it. Does it have any kind of odor? If so, describe it. From your investigation do you believe your log to be "dead?" Explain.

Objectives

- to observe and list different types of life in a decaying log.
- to discuss the characteristics of this particular micro-habitat.

Evaluation

This exercise makes students aware of a habitat that is often overlooked. They learn that life processes take place in less obvious areas and objects.

The sketches and specimens can be used to discuss the exercise and to develop further study.

PLT Activity: 79 Succession and Soil Compaction

Each group will find a soil plot 1 meter square which they will use for all three trips.

See **Examining Your Environment "Mini Climates"**

Soil

Soil

Soil is made up of rocks that have been ground into tiny bits by the weathering action of air and water, and by changes in the climate and environment, by wind, glaciers, and other natural phenomena.

Soil has many characteristics: depth, structure, texture, and elements (the source of food). If the soil which a farmer uses to grow his crops lacks some essential elements, then substitutes, such as fertilizer, are utilized.

There are many different types of terrain in which animals and plants eat, grow and live.

Examples: Meadows, valleys, deserts, mountains, swamps, and oceans.

What others can you think of?

Insects

Inspecting Insects

Go on an insect inspection trip.

Procedure:

1. Look in compost heaps or other such decaying matter.
2. Check around flowers, plants.
3. Look at and in the bases of homes and other structures.
4. Examine dead wood, tree stumps, and trees full of foliage or with dripping sap.
5. Look in fields of weeds and freshwater ponds and streams.
6. Collect all the insects and take them to school for investigation and comparison.
7. How many legs do they have? What do they eat? How do they move?

Home For Insects

Materials

A large bowl, soil, twigs with leaves on them or a fern, wire screen, tuna can or larger similar can.

Procedure

1. Put soil into the bowl.
2. Put twigs or other foliage into the soil.
3. Make the screen into a cylinder with its circumference smaller than the base of the bowl. Push one end of the cylinder into the bowl.
4. Add the insects.
5. Put the can on top of the screen as the lid.

Insect Study

Most insects have the same general characteristics. But they also have different, specialized traits with which we differentiate them. In studying insects, check for the similarities and differences.

Questions:

1. How many body regions are there?
2. How many wings?
3. How many legs?
4. How many antennae? What are their uses?

Procedure:

1. Make a chart of insects that lay eggs.
 2. Most insects lay eggs. Show those that live in water and lay their eggs there, and those which live in the ground or on leaves and lay their eggs there.
 3. Many insects live alone, others live in families. Show those insects that build their own homes and the materials they use.
 4. Show the means of protection that various insects have and use.
- Many insects have the same form throughout life and gradually increase in size. Others go through four different stages.

Examining Saw Bugs

Procedure:

1. Look for saw bugs.
2. How long are they?
3. Their backs are made up of a row of plates for greatest flexibility.
4. Turn the bug on its back. What happens?
5. How long does it take to turn back over? How does its back help it?
6. Put it in a jar in the refrigerator for a short while. They curl up in cold weather.
7. Warm it gently and watch it suddenly uncurl.

Resource Center

See Examining Your Environment "Small Creatures"
Outdoor Science for Elementary Grades Unit 6 Pages 179-201

Forest Terrarium

Materials: Large jar or aquarium, gravel, rich soil, small plants (moss, ferns, ground pine, etc.), small animals (reptiles or amphibians).

Procedure:

1. Set the jar near a window but not in direct sunlight. Put a large piece of material under one end of the jar.
2. Lay some gravel in the upper end of the jar.
3. Plant the shrubs in the earth. Surround them by the moss and pieces of rock and wood.

4. Pour water in the lower end of the jar until it rises to the level of the soil.

5. Add the animals. Feed the snails lettuce; frogs eat insects, flies, and worms; salamanders like flies, ground beef, worms. Remove all food that is not eaten.

6. Place lid over the terrarium or screw lid on jar.

Swinging a Birch

See insert "Birches" by Robert Forst in folder.

Game Suggestions

Designs

The world of nature is full of all sorts of shapes and designs. No two snowflakes are alike, even though every single one has the same number of sides - six. Take a magnifying glass, catch a few snow flakes on a dark surface and let the youngsters see the variety.

Look for designs:

leaves against the sky
bare tree limbs in the winter
bird shapes and silhouettes
color swirls in an oil slick
color lines in a feather
drifts of snow or sand
bark on a tree
spider web

curve of a butterfly's wing
op art on a caterpillar
erosion rings on a pebble
swirl lines on a seashell
peas in a pod
cloud formations
ripples on water

Make designs the play way:

String-Along

Provide construction paper, and jars of tempera paint in various colors.

Each child takes a piece of heavy string or yarn about 36" long, dips it into whatever color he likes, lets it drip a moment or so, then lays it bit by bit on the paper in any design he makes up as he goes along. When the string is in place, he takes a paper towel and presses it over the string - a heavy press for a heavy line, a light press for a light line.

If he likes, he can dip another string into another color, place it on the paper, and continue making designs until the string print pleases him.

Huff and Puff Designs

Shelf paper is good for this, because the paper should not be too absorbent.

Near the bottom of the paper, the child drops a blob of paint. Then he takes a drinking straw and without touching the paint, blows it around the paper in any design he likes. The first attempt is likely to look like a tree or plant, especially if a dark color was used. Smaller blobs of brighter color can be blown around it so as to look like flowers.

As the child learns how to handle the colors and the straw, the designs will take bolder and more original forms. Balance and interesting color combinations will begin to show up.

Grass Prints

The group collects as many different kinds of grasses as possible - all sizes and shapes. They mount them in a pleasing design on a piece of black or dark construction paper, and cover with clear plastic film. Or show them how to put the grasses between two sheets of waxed paper and press with a warm iron. Then - a Native Grass Exhibit.

Tree Bingo

Prepare in advance a list of about thirty names of trees and keep this hidden. To start the game, give each person a large sheet of paper and ask him to draw five lines each way from margin to margin, making twenty-five squares. On a signal, each starts writing the names of as many different trees as he can think of, one in each block, until all the squares are filled. Wait until everybody finishes filling the squares, and give a little prize to the first.

Then read the previously prepared list slowly while each player crosses out on his own sheet the names of trees as read. Anybody who gets five crosses in a row vertically, diagonally, or horizontally, calls "Bingo". Keep on reading until the first vertical, first horizontal, and right and left diagonals have been called.

For other occasions, use the names of animals, or birds, or flowers, instead of trees.

Grade 6

Trip 2 Winter

Review Adopt A Tree

PLT Activity: 13 Memory Circle
After lunch

PLT Activity: 66 Did You See That Dogwood Bark
Worksheet Page 109 in PLT

PLT Activity: 79 Succession and Soil Compaction

Resource Center

See Examining Your Environment "Snow and Ice"
In your folder see booklet "Snow and Ice"
Animal tracking
See Pages 32-36 in Examining Your Environment
"Snow and Ice"

Winter Animal Detective

Observe evidence of animal life in your environment.
See how many "signs" you can list. See if the signs lead you to the animal.
Examples of signs:

Burrow (holes in the ground)
fresh droppings
food clues - gnawings on bark
broken twigs
acorn and nut shells
scattered berries or buds

The height at which a tree has been chewed is evidence about the type of animal that has been eating there.

Use of "Gaming Net" See Obis

Game Suggestions

Oddities

Go on a walk or ramble. Everybody looks for something that is unusual or odd - such as a humpbacked tree, a twin-trunk tree, a nut gnawed by a squirrel, a strange-looking knot on a tree trunk, a stone that looks like an animal or a face, a queerly marked leaf or bark, etc. This game requires observation and imagination - two fine qualities.

Nimble Nine

Each person collects nine small objects (acorns, pebbles, shells, etc.) for markers. They take turns at this game, each trying to make the fewest possible moves, and so become the winner.

To play: Try to remove eight of the nine objects, leaving the ninth one in the center square. Remove by jumping one over another-into any unoccupied adjoining square and taking up the MARKER THAT WAS JUMPED OVER. Jump in any

Nimble Nine

	0	0	0	
	0	0	0	
	0	0	0	

direction, and make any number of jumps with one marker in one move.

Some folks say this game can be won in four moves.

Go to your plotted area and look under dead tree bark, under boards or oardboard, under rocks, dig in old stumps and in the ground. What insects do you find and where?

Insects Found	Where They Were Hibernating
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____

Measure snow on own plot

Measure temperature

Frozen ground - to find how deep, use metal stake and tap with mallet.

Observing Frozen Soil

Procedure:

1. In a field or empty lot, shovel up some top soil that is firm and frozen.
2. Put the soil in large glass containers.
3. On top of the container use glass as a lid.
4. Put the jar in a warm and sunny place.
5. As the soil thaws out, what changes take place?
What kinds of plant and/or animal life appear?

Animal Tracks

Animal Tracking

1. *What animal signs have you found? If you cannot identify, then draw what you see.*
2. *If you were an animal what type would you be, and would you eat the vegetation on your plot? Why or why not?*
3. *If your answer is why not for number 2, then where would you go to eat?*

Blue

Animal Tracking

<i>Animal</i>	<i>Distance Between Each Set of Prints</i>	<i>Depth of Prints</i>	<i>Location</i>	<i>Other Characteristic of the Animal, such as feeding etc.</i>
1.	a.	a.	a.	
	b.	b.	b.	
	c.	c.	c.	
	d.	d.	d.	
	e.	e.	e.	
2.	a.	a.	a.	

Grade 6

Trip 3 Spring

Review Adopt A Tree

PLT Activity: 13 Memory Circle after lunch

PLT Activity: 62 Fallen Log
Worksheet same as Fall Trip

PLT Activity: 70 School Yard Diversity
Resource Center
See Examining Your Environment "Mapping Small Places".
In your folder see booklet "Contour Mapping".

PLT Activity: 79 Succession and Soil Compaction
Visit your soil plot

Post-Activity
"Construction Crews in the Forest"

Pretend you are going to build a home in the woods, but your helpers will be the creatures of the forest. Since birds, insects, and animals can build only in the one way that is natural to them, you will have to put each animal's particular talent to work. For example, if you need a night watchman for your construction project, you might choose a dog, but you might also prefer the silent skunk.

Look at the illustration and notice each of the animals' special talents. You can see that the beaver gnaws, the spider spins, and the prairie dog tunnels. Think about how these animals and others could work for you to build your home.

After each question below write the name of the insect, bird, or animal that you would assign to the job. Add other features to the house if you like.

1. Who would build the roof? _____

How? _____

2. Who would make doors and windows? _____

How? _____

3. Who would dig the cellar hole? _____

How? _____

4. Who might put up the walls? _____

How? _____

5. Who might manufacture the insulation? _____

How? _____

Add your own special features and tell whom you would hire to do the job.

In the space below draw a picture of what your forest house will look like.

Insects

Most animals can be classified as helpful or harmful to man. Make a list of insects found in your plotted area. Fill out next 2 columns.

<u>Insect</u>	<u>How it Harms</u>	<u>How it Helps</u>
1. <u>Termites</u>	<u>eats man's home, papers etc.</u>	<u>Breaks down wood in forests</u> <u>and eliminates dead trees</u> <u>and stumps.</u>
2. <u>Mosquito</u>	<u>bites man, may carry</u> <u>diseases such as malaria.</u>	
3.		
4.		
5.		
6.		
7.		

Insects Outdoors

Insects are more frequently found in some areas than in others. Do you know why the insects are found in these areas? Does the area provide food for the insects? Is the area moist or dry? Is the area cool or hot? Does the area provide protection for the insects from predators? Why do you think these insects select this habitat in which to live? Be prepared to answer these questions back at school. Fill out three columns at your site.

Habitat (describe it)	Insects Found	Why Insects Select This Habitat
1. _____	1. _____	_____
_____	_____	_____
_____	2. _____	_____
_____	_____	_____
_____	3. _____	_____
_____	_____	_____
_____	4. _____	_____
_____	_____	_____
_____	5. _____	_____
_____	_____	_____
_____	6. _____	_____
_____	_____	_____
_____	7. _____	_____
_____	_____	_____

Plants of the School Lawn and School Grounds

Plants are very important to all people and all animals. What plants have been useful to you today? Your pencil comes from woods, your pencil eraser from a rubber tree. In the spaces below indicate the plants you used and how you used them.

After working on your plotted area complete this sheet.

<i>Plants Used</i>	<i>How You Used Them</i>
1. <u>Cedar tree</u>	<u>Pencil to write with</u>
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____

Can you think of a way in which all plants help all animals besides being used for food?

Vegetation:

1. How many different types of vegetation are on your soil plot?
2. Measure the height of the various plants on your plot.
3. After taking off the top vegetation and soil carefully measure the root system of each of these plants.

<i>Height of Plant</i>	<i>Description of Folage</i>	<i>Length of Root</i>	<i>Description of Root System</i>
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.
4.	4.	4.	4.
5.	5.	5.	5.

Nature's Toys

Everybody looks for and finds some twig on the ground that looks like an animal or a creature from outer space, and picks up other small twigs for legs, tails, ears or horns.

With a knife or awl, each person makes small holes in the "body" twig, dips a bit of glue on each smaller twig, and puts it into place. Result: some animal or other wildlife ready for a miniature zoo exhibit.

Variation:

Encourage them to create creatures never before seen on sea or land. Call it Life on Mars, or such.

Classroom

PLT Activity: 8 Patterns in Nature Art

PLT Activity: 33 Paper in the Classroom

PLT Activity: 84 Classroom Conservation
See Examining Your Environment "Pollution"
Collect classroom garbage.

See Environmental Problems p. 11-22 in A Better Place to Be in file folder

PLT Activity: 43 Musing on Music
Look at Extensions

PLT Activity: 45 My Use or Your Use or Our Use
See (insert) U.S. Forestry Service in folder.

PLT Activity: 46 Vacation Homes

PLT Activity: 78 Are Vacant Lots Vacant

PLT Activity: 70 School Yard Diversity
Resource Center
See Examining Your Environment "Mapping Small Places".

Speakers

PLT Activity: 44 How'd That Get Here?
Park Planner - Lyle Hammons DNR

PLT Activity: 71 Christmas Trees After Christmas
Steigerweldt's Tree Farm

Optional

PLT Activity: 18 Origin of Urban Open Space

PLT Activity: 24 With or Without

PLT Activity: 25 I'd Like to Visit a Place Where --

PLT Activity: 57 Can You Dig It?

PLT Activity: 64 Saw Bugs 'n Soil

PLT Activity: 87 Keep on Truckin'?

Grade 7

Introduction

The 7th grade classes will go to the school forest twice a year, in the fall and in the spring. They will be divided into 6 groups at 6 separate stations in the school forest. Each station will have a teacher or resource person conducting an activity.

Schedule will be as follows refer to next page.

Grade 7

<i>Station</i>	<i>Season</i>	<i>Activity</i>
<i>I</i>	<i>Fall</i>	<i>Check snap traps set by 8th graders</i>
	<i>Spring</i>	<i>Refer to #94</i> <i>Set snap traps for 8th graders to check #94</i>
<i>II</i>	<i>Fall</i>	<i>PLT #2</i>
	<i>Spring</i>	
<i>III</i>	<i>Fall</i>	<i>Deer Food Survey #95</i>
	<i>Spring</i>	
<i>IV</i>	<i>Fall</i>	<i>Leaf Collection #117</i>
	<i>Spring</i>	<i>Productivity of Water Fowl #92</i>
<i>V</i>	<i>Fall</i>	<i>Plant Density (herbaceous) #118</i>
	<i>Spring</i>	<i>Plant Density (woody) #118</i>
<i>VI</i>	<i>Fall</i>	<i>Ecology #119 (comparison study)</i>
	<i>Spring</i>	
<i>VII</i>	<i>Fall</i>	<i>Insect Collection #93</i>
	<i>Spring</i>	

Grade 7

Suggested PLT Activities

**Outdoor Activities*

<u>Science</u>	7, 44, 46, 52, 53, 60, 62, 63, 65, 66, 92*, 93*, 94*, 95*, 117*, 118*, 119*
<u>Math</u>	94*, 95*, 118*
<u>English</u>	116*
<u>Social Studies</u>	9, 14, 12, 43, 48, 71, 72
<u>Music</u>	1
<u>Art</u>	4
<u>Industrial Arts</u>	44, 70
<u>Home Ec.</u>	70, 74, 76

#116 Adopt A Tree

Subject

Lang. Arts
Science

Grades 7-12

Objective

Students will be able to list the basic characteristics of a tree as determined by their own observations.

Activity

This activity may be conducted as a class project, with students working individually. Several related activities are included:

Describe tree as it is today - write a paragraph.

Describe physical characteristics.

Is it alive? How can you tell?

Is it dormant? How can you tell?

Listen for tree sounds.

Does the tree have a fragrance?

How did tree get where it is?

How does tree affect other living things around it?

Repeat visit in subsequent field trips

Look to see how tree has changed.

Look to see how tree has remained the same.

Speculate on how tree might look like next time you visit it. After tree has been visited in fall and spring compare paragraphs and write a third paragraph on the comparison.

Extension

1. Brainstorm from 10 to 15 adjectives that could be used to describe a tree. These words can be used to write a poem (haiku or cinquain) or short paragraph about the tree. (See Bibliography, numbers 125, 127, 128, and 345.)

2. Give an oral description of your tree in enough detail so that someone else can recognize it.

Grade 8

Introduction

The 8th grade classes will go to the school forest twice a year, in the fall and in the spring. They will be divided into 7 groups at 7 separate stations in the school forest. Each station will have a teacher or resource person conducting an activity.

Schedule will be as follows, refer to next page.

Grade 8

<i>Station</i>	<i>Season</i>	<i>Activity</i>
<i>I</i>	<i>Fall</i>	<i>Set snap traps for 7th graders to check, refer to #94</i>
	<i>Spring</i>	<i>Check snap traps set by 7th graders, refer to #94</i>
<i>II</i>	<i>Fall</i>	<i>Productivity of water fowl, refer to #92</i>
	<i>Spring</i>	
<i>III</i>	<i>Fall</i>	<i>Plants and places, refer to #91</i>
	<i>Spring</i>	
<i>IV</i>	<i>Fall</i>	<i>Soil and water sampling, refer to #120</i>
	<i>Spring</i>	
<i>V</i>	<i>Fall</i>	<i>Orientation, refer to #90</i>
	<i>Spring</i>	
<i>VI</i>	<i>Fall</i>	<i>PLT #2 and #116</i>
	<i>Spring</i>	
<i>VII</i>	<i>Fall</i>	<i>PLT #25</i>
	<i>Spring</i>	<i>PLT #18 - Revised</i>

Grade 8

Suggested PLT Activities
**Outdoor Activities*

Science 7, 40, 46, 91*, 92*, 94*, 120*

Math 58, 73, 74, 75, 90*, 91*, 92*, 94*

English 2, 25, 116*

Social Studies 16, 18

Music

Art 27

Industrial Arts 68, 69

Home Ec 61

#116 Adopt A Tree

Subject

Lang. Arts
Science

Grades 7-12

Objective

Students will be able to list the basic characteristics of a tree as determined by their own observations.

Activity

This activity may be conducted as a class project, with students working individually. Several related activities are included:

Describe tree as it is today - write a paragraph.

Describe physical characteristics.

Is it alive? How can you tell?

Is it dormant? How can you tell?

Listen for tree sounds.

Does the tree have a fragrance?

How did tree get where it is?

How does tree affect other living things around it?

Repeat visit in subsequent field trips

Look to see how tree has changed.

Look to see how tree has remained the same.

Speculate on how tree might look like next time you visit it. After tree has been visited in fall and spring compare paragraphs and write a third paragraph on the comparison.

Extension

1. Brainstorm from 10 to 15 adjectives that could be used to describe a tree. These words can be used to write a poem (haiku or cinquain) or short paragraph about the tree. (See Bibliography, numbers 125, 127, 128, and 345.)

2. Give an oral description of your tree in enough detail so that someone else can recognize it.

#18 Native Americans and the Forest

Subject

Social Studies

Objective

Students will be able to describe how the cultures and economies of Pioneers have been and continue to be influenced by the forest and other natural resources.

Activity

First, find out which pioneers have been and are active in your state, province, or region. Then divide the class into groups of three to five students each. Ask each group to obtain information on one of the types of pioneers. If possible, they might research changes in the pioneers culture and lifestyle that may have taken place to the present.

While they are gathering data about any given period of time, students can consider the following:

How the pioneers culture and religion relate to the forest and to other natural resources.

How the groups economy depends upon the forest and its products, including wildlife. (Has the group, for instance, used tree bark or fruit for food or medicine?) If there is no forest in the region, where does this group live and on what natural resources does the group's economy depend?

Ask the students to share the information they have collected and to discuss these questions, engaging in additional research to provide information necessary to the discussion.

To what degree have the peoples -past and present- been dependent upon the forest environment for survival? On other natural resources?

If the pioneers did not live in the forest, did they use any forest products? If so, how did they get these products?

How much has the forest contributed to the religious beliefs of the pioneers?
How might this have affected the behavior of the pioneers toward the forest?

Do the descendants of the early immigrant settlers still view the forest
and other natural resources as they did in early historical periods?

What have been the trends in the use of natural resources by the early
immigrant settlers to the present day?

Variation

Proceed as described in the first exercise except assign half the groups to
investigate the lifestyles of pioneers who lived or presently live in a different
environment than is found locally. For example, if pioneers lived or live in
the forest, half the class might investigate those who lived or live on the
prairies or deserts. Then, as a class, compare and discuss the different ways
of life:

Describe each groups environment and its influence on religious beliefs and
other cultural characteristics.

Determine whether pioneers living in one type of environment use materials
or products from another. If so, how have they acquired them?

Offer your opinions as to which pioneers lead or have led easier lives.
Describe the bases for your feelings.

Describe each groups treatment of its native environment.

Identify each groups source of food. Hunting? Farming? Fishing?

Describe those elements or aspects of the groups culture which have remained
to the present.

Extension

Look up or discuss students own heritage. Try to trace back to pioneer days.
Write a short paper or few paragraphs on how you would have lived in those days.

#90 Orientation

Subject

Math

Objective

Students will be able to use a map and a compass.

Activity

By using a map and a compass the students will have to find selected locations in the forest.

Extensions

Through measurement, the students would plot the locations on graph paper and produce a map of their own.

#91 Plant Density

Subject

*Math
Science*

Objective

Students will be able to compare plant density to soil moisture content.

Activity

The number of plants in certain randomly selected areas will be determined and related to the amount of soil moisture present in each sample plot. Guide No. 1 from the U. S. Fish and Wildlife Service describes the activity in detail.

Extensions

Soil types may also be checked in relationship to plant density and/or species present.

#92 Productivity of Waterfowl

Subject

Math
Science

Objective

Students will be able to estimate productivity of waterfowl in artificial nesting structures.

Activity

Investigate artificial nest structures to determine their use and number of offspring produced. Probe Series Guide No. 15 from the U. S. Bureau of Sport Fisheries and Wildlife gives a more detailed description.

Extensions

Similar activities could be performed involving other species of birds such as tree swallows, which might use artificial nesting structures.

#93 Insects

Subject

Science

Objective

Students will become aware of the variety of insects in the forest.

Activity

An insect collection will be at various stations in the school forest.

Extensions

Collections will be taken at different times of the year to show seasonal variation. Insects collected will be labeled as to date, place, collection, and habitat. Insects and plants from Environmental Education Guide, U. S. Fish and Wildlife Service, Guide No. 4.

#94 Small Mammal Study

Subject

Science
Math

Objective

Students will be able to conduct a small mammal study.

Activity

Snap traps will be used to collect specimens. Information concerning species habitat, and various measurement will be gathered. Autopsies will be performed, study skins prepared and records kept.

Extensions

Contact universities for possible cooperative research and/or specimen collection. A population of Pocket Gophers from U. S. Fish and Wildlife Services, Guide No. 3.

Sources

Wildlife Investigational Techniques (chapters 8, 9, and 10).

#95 Deer Food Survey

Subject

Science
Math

Objective

Student will be able to determine which woody plants are most frequently browsed by deer.

Activity

Browsed plants will be collected and identified from randomly selected plots in the school forest. Guide No. 9 from the U. S. Fish and Wildlife Service describes the activity in detail.

Extension

In spring similar activity could be conducted involving the use of browse plants by the snowshoe hare and other small mammals.

#117 Leaf Collection

Subject

Science

Objective

Students will be able to identify deciduous trees.

Activity

In the fall, the students will collect fallen leaves, study their structural characteristics, and identify the tree species by using picture keys.

Extensions

The leaves collected will be pressed, dried, and mounted on paper. Each species will be labeled with its common name and scientific name.

#118 Plant Density

Subject

Science
Math

Objective

The students will be able to determine the number of herbaceous plants per square meter.

Activity

The students will count the herbaceous plants in randomly selected plots. The number of plants, kinds of plants and type of habitat will be compared to the measured area.

Extension

A similar study will involve woody plants.

#119 Ecology

Subject

Science

Objective

The students will be able to compare and contrast selected ecosystems.

Activity

Through personal observation of 2 or 3 ecosystems each student will answer a series of questions designed to emphasize variation. Refer to A Nature Workshop booklet presented for the Adult Community of Stevens Point.

Extensions

- 1) Invest in a magnifying glass to be able to take a closer, more detailed look at the "hidden worlds" around you.*
- 2) Stake out your own quadrant near your home and observe it closely for a month, season or even a year. Keep a record of the various organisms and animal signs found in it and any changes taking place in it during the time period.*
- 3) Make a terrarium of organisms found in the "Hidden world". First find a large glass container such as a large jar, a fishbowl, aquarium tank or whatever you can find. Have a lid, glass plate or something to cover the container with. Cover the bottom of the container with damp sand and charcoal in alternate thin layers. Put in small plants like liverworts, lichens, fungi, tiny ferns, mosses, and club mosses. Also add pebbles, stone and bark pieces for a completed touch.*
- 4) Make a list of the many different microhabitats that you are able to find in a particular habitat and note the organisms found in them and their differences as compared to other microhabitats.*

- 5) *Your home and backyard are composed of microhabitats: Look around your homes for different microhabitats (a dark corner, damp basement corner, under a couch, cellar cupboard, etc.), and also around your yard (a puddle, under the hedges, the woodpile, the flower garden, etc.). What kinds of organisms are found in these microhabitats?*

Fill out a separate set of questions (2-7) for each discovery of the presence of animal wildlife. Don't worry about the names of the plants and animals. Describe them in detail using YOUR OWN WORDS: Remember to use ALL of your senses. The instructors have field guides which may be helpful for identification. If you do not know how to use one, ask the instructor for assistance.

QUESTIONS

1. Describe the ecosystem you are in.
 - A. Discovery #1
2. Look for, list and describe in your own words signs of animals found.
3. What type of vegetation is in the area?
4. Is there water nearby? What type (lake, stream, puddle, dew)?
5. What shelter is available in your ecosystem?
6. Is it sunny or shady where you found the animal presence?
7. Attempt to identify any animals or animal signs discovered through use of the field guides available.

B. Discovery #2

- 2. Look for, list and describe in your own words signs of animals found.*
- 3. What type of vegetation is in the area?*
- 4. Is there water nearby? What type (lake, stream, puddle, dew)?*
- 5. What shelter is available in your ecosystem?*
- 6. Is it sunny or shady where you found the animal presence?*
- 7. Attempt to identify any animals or animal signs discovered through use of the field guides available.*

C. Discovery #3

- 2. Look for, list and describe in your own words signs of animals found.*
- 3. What type of vegetation is in the area?*
- 4. Is there water nearby? What type (lake, stream, puddle, dew)?*

5. *What shelter is available in your ecosystem?*
6. *Is it sunny or shady where you found the animal presence?*
7. *Attempt to identify any animals or animal signs discovered through use of the field guides available.*
8. *Do you see any evidence of man's presence (past or recent) in your ecosystem?*

How did his presence affect the ecosystem?

How might this area be managed for wildlife?

ACKNOWLEDGEMENT

1. *The Wildlife Resource of Wisconsin - Mammals. Wisconsin Department of Natural Resources. Reprinted from: Wildlife, People and the Land, 1970.*

Grade 9

<i>Station</i>	<i>Season</i>	<i>Activity</i>
<i>I</i>	<i>Fall</i>	<i>PLT #4, #8</i>
	<i>Spring</i>	<i>PLT #4, #8</i>
<i>II</i>	<i>Fall</i>	<i>Adopt A Tree #116, PLT #5 Set Small Mammal Traps</i>
	<i>Spring</i>	<i>Adopt A Tree, PLT #5, Small Mammal Study, Check traps</i>
<i>III</i>	<i>Fall</i>	<i>PLT #31</i>
	<i>Spring</i>	<i>PLT #39</i>
<i>IV</i>	<i>Fall & Spring</i>	<i>Map Exercise - Will map a school forest trail #98</i>
<i>V</i>	<i>Fall & Spring</i>	<i>Observe Forestry Techniques #97</i>
<i>VI VII VIII</i>	<i>Fall & Spring</i>	<i>Trail Improvement and Maintenance #96</i>
	<i>Winter</i>	<i>Students will observe winter ecology via snowshoes and/or cross-country skis #44 Observe snow depth and snow melt #100 Observe snow temperature #101</i>

Grade 9

Suggested PLT Activities
**Outdoor Activities*

Science 45, 97*, 98*, 99*, 100*, 101*

Math 85, 98*, 100*, 101*

English 39, 82, 99*, 116*

Social Studies 21, 39, 45, 80, 82, 84, 97*

Music

Art 4, 99*

Industrial Arts

Home Ec. 77

Phy. Ed. 80, 99*

#116 Adopt A Tree

Subject

Lang. Arts
Science

Grades 7-12

Objective

Students will be able to list the basic characteristics of a tree as determined by their own observations.

Activity

This activity may be conducted as a class project, with students working individually. Several related activities are included:

Describe tree as it is today - write a paragraph.

Describe physical characteristics.

Is it alive? How can you tell?

Is it dormant? How can you tell?

Listen for tree sounds.

Does the tree have a fragrance?

How did tree get where it is?

How does tree affect other living things around it?

Repeat visit in subsequent field trips

Look to see how tree has changed.

Look to see how tree has remained the same.

Speculate on how tree might look like next time you visit it. After tree has been visited in fall and spring compare paragraphs and write a third paragraph on the comparison.

Extension

1. Brainstorm from 10 to 15 adjectives that could be used to describe a tree. These words can be used to write a poem (haiku or cinquain) or short paragraph about the tree. (See Bibliography, numbers 125, 127, 128, and 345.)

2. Give an oral description of your tree in enough detail so that someone else can recognize it.

Natural Materials Art

Objective

Students will be able to creat using natural materials.

Activity

While in an outdoor setting, ask your students to work alone or in small groups in order to create collages using only the materials they can obtain from this natural environment. If they are gathering these materials, remind the students to take care to do no permanent harm to the environment. The students might also use drawing paper to create a picture using only those colors they can obtain from natural sources. They might use charcoal from burned wood to produce black; soil or rocks for brown, gray, or red; leaves for green; berries for purple.

You may wish to "fix" the completed collages or pictures with lacquer, approved-propellant hair spray, or plastic wrap but, first, ask students if they consider adding the preservative "natural."

Variations

- 1. Ask your students to think of and list materials which can be used in some form of art or craft. Second, ask them to classify these materials into those derived from trees and those from other sources. Some materials obtained from trees are paper, charcoal, and turpentine (see Resources) and some from other sources are plaster of paris, clay, and stone.*

Make a third list of materials whose origins the students do not know. Invite individual students to research each of these and report to the class on the sources of the materials. As a class, determine the importance of the forest as a source of art and craft materials. Do the students think the forest is important both as a source of materials and as a source of inspiration for art?

2. *Suggest that your students create a "returnable" piece of art from natural materials, materials derived without having done significant harm to the environment. The art work must be returned to the place from which its raw materials came. Challenge students to create a piece which is aesthetically pleasing in its natural surroundings and in a human-made environment. All designs should be completely biodegradable.*

Extension

Don't stop with art materials. Look at other natural resources used in the classroom to enhance instruction and learning. Weigh the environmental impact of these materials against the potential for instruction they afford.

Subject #96

Grade 9 Fall Spring

Objective

Students will be able to do trail maintenance and improvements.

Activities

Students will bring shovels and saws to improve and repair the trails. The impact on the forest will be kept to a minimum but brush and limbs will be pruned. The trail will be leveled and the effects of erosion will be reduced. Markers will be replaced or repaired and repainted. Trails near the roads will be developed and maintained in such a manner as to allow the handicapped students to use them.

Subject #97

Science
Economy
Occupation

Grade 9 Fall Spring

Objective

Students will be able to recognize forestry management techniques.

Activities

Plot evaluation. Resource person describes forestry techniques eg. thinning. Students will evaluate on paper status of numbered trees in a given plot. After students are done they gather as a group with resource person to discuss their opinions regarding status of each numbered tree.

Extension

Students will estimate timber production/board feet of 20 trees in a given area.

Subject #98

*Math
Science*

Grade 9 Fall Spring

Objective

Students will be able to map an established school forest trail.

Activities

Using a compass and meter stick depict on graph paper 100 feet of school forest trail.

Extensions

Map school grounds with careful attention to position of buildings, trees, and athletic field.

Subject #99

Science

Art

English

Physical Ed

Grade 9 Winter

Objective

Students will observe winter ecology.

Activities

Students will have an opportunity to spend some time learning basic cross country ski or snow shoe techniques. The winter field trip will consist of a cross country ski and snow shoe tour through the school forest area.

Preselcted stops will show succession, animal signs, browse, snow cover.

Subject #100

Science

Grade 9 Winter

Objective

Students will measure snow depth in different locations and make comparisons with gathered information.

Activities

*Refer to guide No. 6, Outdoor Classroom Environmental Education Guide,
U. S. Fish and Wildlife Service, 1975.*

Subject #101

Science

Grade 9 Winter

Objective

Students will measure snow temperatures, air temperatures, and snow depth to find patterns of temperature variation. Information will be used to determine the relationship between snow and the survival of animals.

Activities

Refer to guide No. 5, Outdoor Classroom Environmental Education Guide, U. S. Fish and Wildlife Service, 1975.

Grade 10

<i>Station</i>	<i>Season</i>	<i>Activity</i>
I	Fall	Old School Site/History of Area #110
	Winter	Farm Site across road/History of area #110
	Spring	White Pine Opening/History of area #110
II	Fall	Small Mammal Study (Follow 9th Grade #111)
	Winter	Animal Sign #111
	Spring	Small Mammal Study (Set traps for 9th Grade)
III & IV	Fall & Spring	Plant Succession #112, #95
III through VIII	Winter	Remainder of circuit/Study areas will be conducted on skis or snowshoes in winter #113
V	Fall & Spring	Art and/or Foreign Language #114
VI	Fall & Spring	Language Study #115
VII	Fall & Spring	Adopt A Tree PLT I #116

Grade 10

Suggested PLT Activities
**Outdoor Activities*

Science 6, 55, 63, 95*, 111*, 112*, 113*, 114*, 116*

Math 55, 95*

English 6, 115*, 116*

Social Studies 9, 10, 50, 83, 110*, 115*, 109

Music

Art 114*

Industrial Arts

Home Ec

Foreign Language 114*

#116 Adopt A Tree

Subject

Lang. Arts
Science

Grades 7-12

Objective

Students will be able to list the basic characteristics of a tree as determined by their own observations.

Activity

This activity may be conducted as a class project, with students working individually. Several related activities are included:

Describe tree as it is today - write a paragraph.

Describe physical characteristics.

Is it alive? How can you tell?

Is it dormant? How can you tell?

Listen for tree sounds.

Does the tree have a fragrance?

How did tree get where it is?

How does tree affect other living things around it?

Repeat visit in subsequent field trips

Look to see how tree has changed.

Look to see how tree has remained the same.

Speculate on how tree might look like next time you visit it. After tree has been visited in fall and spring compare paragraphs and write a third paragraph on the comparison.

Extension

1. Brainstorm from 10 to 15 adjectives that could be used to describe a tree. These words can be used to write a poem (haiku or cinquain) or short paragraph about the tree. (See Bibliography, numbers 125, 127, 128, and 345.)

2. Give an oral description of your tree in enough detail so that someone else can recognize it.

Grade 10

Three trips/Fall, Winter, Spring. 8 35 min blocks, students to begin at any station, follow in sequence.

1. Fall/Spring - #110

Objective

Students will become aware of local heritage.

Activity

Conduct dig on any of several farm sites/ Photograph and/or collect artifacts.

Extensions

Read, discuss any of several scientific american articles on archeology.

Tape record conversations with locals.

Museum of artifacts in Washington School.

1. Winter

Objective

Students will become aware of local heritage.

Activity

Lecture and/or demonstration at any of several farmsites, Theilers (across road from White Pine) or Lodholz (across road from School Site).

Extensions

Read, discuss any of several Scientific American articles on archeology.

Tape record conversations on area history with locals.

Museum of artifacts in Washington School.

Subject #110

Grade 10

Objective

Students will become aware of local heritage.

Activity

Conduct Dig on any of several farm sites. Photograph and/or collect artifacts.

Extensions

Read, discuss any of several Scientific American Articles on Archeology.

- Tape record conversations w/locals.*
- Museum of artifacts in Washington School.*

Subject #111

Grade 10

Objective

Students will be able to conduct a small mammal study.

Activity

Snaptraps will be set in designated areas * by 9th grade, results will be checked, marked, marked, measured by 10th grade students. (Reverse procedure in Spring).

Extension

Industrial Arts makes traps (see Comstock, Wildlife Investigational Tech.)

*See map

Subject #112

Grade 10

Objective

Students will be able to identify characteristics of changing plant communities.

Activity

A quadrat study will be conducted, 10 M square for large species, diminishing sizes for smaller species. Species will be counted, measured, density will be extrapolated.

Extensions

See Site Series #3

Subject #113

Grade 10 Winter

Animal sign/browse, scats, tracks.

Objective

Students will be able to recognize and evaluate animal signs.

Activity

(See Wildlife Investigational Techniques, Chap. 5, Mammals of Wisconsin DNR pamphlets). Sign will be recorded on a map grid (this station will move each time to minimize student impact on study area). Extrapolation for population densities will be done in math classes.

Extension

PLT #55, Guide 9 (#95)

Correlate with population studies of other classes.

5th hr. Fall, Spring

Objective

Students will be able to identify animal sign.

Activity

PLT 55, Guide No. 9.

Extension

See Wildlife Investigational Techniques.

Subject #114

Grade 10

Art-Language Study - Probe 14

Objective

The natural setting will be seen as a stimulus for Art and/or Foreign Language.

Activity

PLT #9, Probe Series 14

Subject #115

Grade 10

Objective

Students will become aware of the philosophy of nature writers and/or poets past and present.

Activity

Read selected references...Current interest periodicals, (Canoe, Wilderness Camping, Biking) Jeffers, Thoreau, Muir, - try to emphasize continuing nature of environmental movement - That modern ecological movement can be traced to Neo-malthusianists (Sio) of 1948 and before...To the Bible (Psalm 8) for a discussion of mans attitude toward the land. Try to find examples of topics discussed by writers/i.e. Muirs "Seeing the Wind", Thoreaus lightening struck tree.

Grade 11

Two trips to the school forest. One all day trip in the fall and one all day trip in the spring will allow comparisons. The school forest activities are:

1. Detailed Creek Study, ref. #105
2. Population and Home Range of Snowshoe Hare, ref. #102
3. Construct the needed structures, ref. #103
4. Adopt A Tree, ref. PLT #1
5. Photography, ref. #107
6. Survey, ref. #106
7. Wildlife Management, ref. #104

Grade 11

Suggested PLT Activities
**Outdoor Activities*

Science 41, 102*, 104*, 105*, 106*

Math 102*, 105*, 106*

English 12, 13, 16, 105*, 107*, 116*

Social Studies 12, 13, 15, 16, 24, 36, 79

Music

Art 107*

Industrial Arts 103*

Home Ec.

Photography 107*

#116 Adopt A Tree

Subject

Lang. Arts
Science

Grades 7-12

Objective

Students will be able to list the basic characteristics of a tree as determined by their own observations.

Activity

This activity may be conducted as a class project, with students working individually. Several related activities are included:

Describe tree as it is today - write a paragraph.

Describe physical characteristics.

Is it alive? How can you tell?

Is it dormant? How can you tell?

Listen for tree sounds.

Does the tree have a fragrance?

How did tree get where it is?

How does tree affect other living things around it?

Repeat visit in subsequent field trips

Look to see how tree has changed.

Look to see how tree has remained the same.

Speculate on how tree might look like next time you visit it. After tree has been visited in fall and spring compare paragraphs and write a third paragraph on the comparison.

Extension

1. Brainstorm from 10 to 15 adjectives that could be used to describe a tree. These words can be used to write a poem (haiku or cinquain) or short paragraph about the tree. (See Bibliography, numbers 125, 127, 128, and 345.)
2. Give an oral description of your tree in enough detail so that someone else can recognize it.

Subject #102

Science
Math

Grade 11

Objective

Students will be able to calculate population and home range of snowshoe hare, Lepus americanus L.

Activity

A capture-recapture study of the snowshoe hare will be conducted by students. Capture sites will be marked on a gridded map. Animals will be measured and earmarked with a tattoo number. Juveniles will be toe-clipped. Sex, determination and breeding condition will be noted for all individuals.

Extensions

1. Seek a cooperating institution re. studies with other animal species.
2. Do similar study on another site.

Sources Wildlife Investigational Techniques, Chapter 7

"Animal Population Analysis" - Quick

Ibid Chapter 6 "Criteria of Sex and Age"

Ibid Chapter 5 "Estimating the Number of Game Populations"

Snowshoe Extension

Do capture-recapture classroom exercise with a jar of dried beans. Put 100 beans in jar, 10 beans of which are colored. Randomly sample the jar of beans keeping track of the number of marked vs. unmarked beans. Do this 10 times and calculate the population/total number of beans.

$$\frac{X}{E} = \frac{\text{marked}}{\text{unmarked}}$$

Subject #103

Industrial Arts

Grade 11

Objective

Students will be able to construct the needed structures on the school forest sites.

Activities

Students will build and maintain bridges, shelters, amphitheater and fire pit, outhouse, blinds.

Extension

As an inclass activity, students will make nesting boxes, birdhouses, feeders, and traps.

Subject #104

Science

Grade 11 Spring and/or Fall

Objective

Students will be able to conduct wildlife management practices.

Activities

Students will follow the recommendations of DNR as outlined in "Tomahawk School Forest, Lincoln County, Wildlife Management Recommendations", 1977.

Variation

Students will study wildlife habitats as outlined in "A Lesson Plan For Investigating Environmental Habitats", Teaching Environmental Education, Forest Service, U.S. Dept. of Agri, 1973.

Sources Wildlife Investigational Techniques, Ch. 4,

"Evaluation of Habitat"

Ibid. Ch. 2 "Record Keeping by Means of Field Notes and by Photography" Mosby.

Subject #105

Science
Math
English

Grade 11 Spring

Objective

Students will be able to biologically and physically analyze the school forest stream.

Activities

Are outlined in, "A Lesson Plan for Measuring Some Water Quality Criteria", Teaching Material for Environmental Education, Forest Service, U.S. Dept. of Agric., 1973.

Variation

Measure and analyze the Somo, Little Somo River adjacent to school forest using the above mentioned outline or, Guide No. 10 Outdoor Classroom Environmental Education Guide, U.S. Fish and Wildlife Service, 1975.

Subject #106

Math
Geol
Geog
Science

Grade 11 Spring and/or Fall

Objective

Students will be able to survey the school forest.

Activity

Establish picket lines, exterior and interior.

Activity -Classroom

Review geometry involved in surveying, establish survey techniques.

Extension

Contact local survey

Smaller subunits for small mammal research.

Map contours and elevations

Construct contour map of designated area of school forest -

(Beaver Pond also)

Subject #107

Photography
Art
Journalism
Science

Grade 11

Objective

Students will be able to record photographically the school forest and related activities.

Activities

Students will photograph:

1. Selected forest areas from fixed points to show succession and development.
2. Activities of various groups for instructional use (slides and movies etc.)
3. Activities and projects for school publications and local newspaper and school forest fair exhibit.

Source

Refer to: *Wildlife Investigational Techniques, Chapter 2, Record Keeping by Means of Field Notes and by Photography*, by Mosby.

Subject #107

Photography
Art
Journalism
Science

Grade 12

Objective

Students will be able to record photographically the school forest and related activities.

Activities

Students will photograph:

1. Selected forest areas from fixed points to show succession and development.
2. Activities of various groups for instructional use (slides and movies etc.)
3. Activities and projects for school publications and local newspaper and school forest fair exhibit.

Source

Refer to: Wildlife Investigational Techniques, Chapter 2, Record Keeping by Means of Field Notes and by Photography, by Mosby.

Subject #108

Math
Geography
Geology

Grade 12

Objective

Students will be able to construct maps of school forest areas.

Activities

Maps including contours of school forest areas will be prepared by students as outlined in Wildlife Investigational Techniques, Chapter 3, Reconnaissance Mapping, by Mosby.

Extension

- A. Students will prepare maps from 3D photos from DNR Library of Aerial Photos.
- B. Acreage determination from photos
- C. Measurements of land forms

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